Sunday, June 19

1:00-2:00 PM  Check in/Registration
               – Hillenbrand Hall, Rec Lounge C102
               Fill out assessment

2:00 PM      Depart by bus

2:15-2:30 PM  Welcome – STEW 310
               Pankaj Sharma, Associate Professor of Technology Leadership
               and Innovation (Courtesy); Managing Director, Energy Academy &
               Energy Center, Discovery Park, Purdue

2:30-3:00 PM  Energy Icebreaker

3:00-4:15 PM  Teachers’ session by Jerry Krockover – STEW 206
               Professor Emeritus of Earth, Atmospheric, & Planetary
               Sciences Education, Purdue
               Anne Dick, Science Department Head, Maconaquah High
               School, Bunker Hill, IN
               Yamila Cancel-Sanchez, Science and Math Teacher, The
               Academy of Science and Entrepreneurship, Bloomington, IN
               Lora Cottom, Life Sciences Teacher, South Vermillion High
               School, Clinton, IN
               Laura Swessel, Science Teacher, Honors and ACP Physics,
               Earth/Space, Scientific Research, Our Lady of
               Providence Jr/Sr High School, Clarksville, Indiana
               Rachel Williamson, Mississinewa High School & Middle
               School, Gas City, IN

3:00-4:15 PM  Students’ Session and Campus Tour – STEW 310
               Ranjita Ghose, Senior Research Engineer, ExxonMobil
               Chemical Company, Baytown, TX
Pankaj Sharma
Mini campus tour by Counselors

4:30 PM  Group Photo  - Purdue Memorial Union Lawn

4:45 PM  Networking
**North Ball Room, Purdue Memorial Union**

5:15 PM  Welcome
Pankaj Sharma, Associate Professor of Technology Leadership and Innovation (Courtesy); Managing Director, Energy Academy & Energy Center, Discovery Park, Purdue

Introductory remarks
Jon Harbor
Director of Digital Education and Associate Vice Provost for Teaching and Learning
Professor, Department of Earth, Atmospheric, and Planetary Sciences, Purdue University

5:45 PM  Dinner

6:30 PM  Energy: Challenges and Opportunities
*Rakesh Agrawal, Winthrop E. Stone Distinguished Professor of Chemical Engineering*

7:30 PM  Residence Hall/Program Orientation
North Ballroom, PMU

8:00 PM  Depart for Hillenbrand Residence Hall (walk)
Monday, June 20

7:00-8:00 AM  Breakfast – Hillenbrand Dining Court

8:00 AM  Depart for Hall of Discovery Learning and Research (DLR)

8:15-8:30 AM  Welcome – DLR 131  
Beth McCuskey  
Vice Provost for Student Life, Purdue

8:30-9:15 AM  Program Orientation – DLR 131  
Pankaj Sharma

9:15-10:00 AM  Energy Sustainability  
Mariann Quinn  
Sustainability Director, Duke Energy Business Services

10:00-10:15 AM  Break

10:15-11:00 AM  Introduction to the Hands-on activities  
Michael Arquin, Director, Kidwind Project  
John Zakelj, Wind Senator and Science Teacher & High Ability Program Coordinator, Union City Jr/Sr. High School, Union City, IN

11:00-11:50 AM  Overview of Research Projects  
Sally Bane, Assistant Professor of Aeronautics and Astronautics

Meet faculty and graduate students for the research projects (some of them might join for lunch as well)

11:50-noon  Walk to MRGN Cafe

Noon  Lunch – MRGN Cafe

1:00-2:15 PM  Principles: Electricity Transmission and Distribution (Snap Circuits)  
Hands-on activities - Mann Hall Atrium, 1st and 2nd Floor  
Michael Arquin and John Zakelj

2:15-2:30 PM  Break

2:30-4:30 PM  Energy Education Exercises  
Photovoltaic (Solar Angle Kit); Wind Farm; LEGO MINSTORM  
Hands-on activities - Mann Hall Atrium, 1st and 2nd Floor
Michael Arquin  
Director, KidWind Project, Saint Paul, MN
John Zakelj, Science Teacher/High Ability Program Coordinator 
Union City Jr/Sr High School, Union City, IN 
Roger Tormoehlen  
Professor of Agriculture and Biological Engineering  
Richard Fox  
Computer Analyst, Youth Development and Agricultural Education

4:30-4:45 PM Briefing

4:45 PM Depart for dinner

5:00 PM Dinner at Shreve Hall – Jade Room  
Guest speaker: Engineering Your Future  
Robert Evanich, Principal Engineer, Duke Energy  
Chair of the Central Indiana Section, IEEE

6:30 -9:00 PM Background work on projects  
Stanley Coulter Room 179 and 231  
Sally Bane, Assistant Professor of Aeronautics and Astronautics  
Hillenbrand Conference Room C102A (private room for teachers)

9:00 PM Extracurricular activities

10:00 PM Return to Residence Hall
Tuesday, June 21

7:00-8:00 AM  Breakfast – Hillenbrand Dining Court

Notes for the day: (1) must have closed toe shoes; (2) must have long pants; no dresses/skirts allowed; (3) taking photos is restricted and prohibited during tour; (4) hard hats will be provided when required; (5) must follow directions during tour; (6) must have safety goggles and lab coat for any hands-on activities and/or research projects.

8:00 AM  Depart for Mann

8:15-11:45 AM  Renewable Energy Challenge – Mann Hall Atrium, 1st and 2nd Floor
John Zakelj, Wind Senator and Science Teacher & High Ability Program Coordinator, Union City Jr/Sr. High School, Union City,

11:45-noon  Walk to MRGN Cafe

Noon  Lunch – MRGN Cafe

1:15-3:15 PM  Principles of Grid Operation
Hands-on activities - Mann Hall Atrium, 1st and 2nd Floor
Michael Arquin
John Zakelj
Jason Monroe, Energy Management Supervisor, Tipmont REMC, Linden, IN

3:15-3:30 PM  Break

3:30-4:00 PM  Emerging Technologies: Thermoelectric Material
Amy Marconnet, Assistant Professor of Mechanical Engineering, Purdue
Counselors: Aalok Gaitonde and Jaesik Hahn (Graduate Students, Mechanical Engineering)

4:00-4:30 PM  Emerging Technologies: Piezoelectric Material
Na (Luna) Lu | Associate Professor of Civil Engineering, Purdue
Graduate Students: Ehsan Ghafari, Seyedali Ghahari, Yining Feng (all from Civil Engineering)

4:30-4:50 PM  Explore Our Solar System – A self-guided tour
(next to Hall of Discovery Learning and Research Center Building)

4:50 PM  Depart for dinner
5:00 PM  Dinner at Shreve Hall – Jade Room

6:30 -9:00 PM  Work on projects (students) and energy lessons (teachers)
Stanley Coulter Room 179 and 231
Hillenbrand Conference Room C102A (private room for teachers)

9:00 PM  Extracurricular activities

10:00 PM  Return to Residence Hall
Wednesday, June 22

Notes for the day: (1) must have closed toe shoes; (2) must have long pants; no dresses/skirts allowed; (3) taking photos is restricted and prohibited during tour; (4) hard hats will be provided when required; (5) must follow directions during tour; (6) must have safety goggles and lab coat for any hands-on activities and/or research projects.

Note to teachers: Teachers should finalize their topic and present the rough draft of their lesson plans to the mentor teachers by 7:00 PM.

7:00-8:00 AM Breakfast – Hillenbrand Dining Court

8:00 AM Depart by bus for the research projects

8:30-11:30 PM Work in your groups for research projects

(Project #1) (Dark Yellow) The Science of Photovoltaic Solar Cells: Fabrication and Characterization of Dye Sensitized Solar Cells from Berries
Rakesh Agrawal, Winthrop E. Stone Distinguished Professor of Chemical Engineering, Purdue
Graduate Students - Scott McClary, Joseph Andler, Ryan Ellis Robert Boyne (all from Chemical Engineering)
Counselor: Vlad Podolsky, Graduate Student, Aeronautics and Astronautics Engineering
Forney Hall 3140, 3126, 3124, 3160
Number of participants ~8

(Project #2) (Light Yellow) Rechargeable Batteries with Advanced Electrode Materials
Vilas Pol, Associate Professor, Chemical Engineering, Purdue
Graduate Students: Ryan Adams and Dong Hee Kim (all from Chemical Engineering)
Counselor: Meghan Switzer, Undergraduate, Electrical Engineering Technology
Forney Hall, Room 2184
Number of participants ~8

(Project #3) (Blue) Fuel Cell and TEM: Catalysts for Energy Innovation
Volkan Ortalan, Assistant Professor, Materials Engineering, Purdue
Jeffrey Greeley, Associate Professor, Chemical Engineering, Purdue
Raj Gounder, Assistant Professor, Chemical Engineering, Purdue
Graduate Students: Ravi Joshi, Chang Wan, Tej Choksi (all from Chemical Engineering)
Counselor: Hasson Richardson, Undergraduate Student, Mechanical Engineering Technology
Guest Coordinator - Ranjita Ghose, Senior Research Engineer, ExxonMobil Chemical Company, Baytown, TX
Birck Nanotechnology Center, Room 2001
Number of participants ~16

(Project #4) (Dark Red) Betavoltaic Nuclear Batteries:
Theory of Operation, Characterization methods, and Temperature Effects
Robert Bean, Professor of Nuclear Engineering
Shripad Revankar, Professor of School of Nuclear Engineering
Tom Adams, Research Associate, Naval Surface Warfare Center, Crane Division
Graduate Students: Anand Vadlamani and Ian Hamilton (all from School of Nuclear Engineering)
Physics, Room B28
Counselor: Olatunji, Fulani, Graduate Student, Electrical and Electronics Engineering
Number of participants ~8

(Project #5) (Light Red) Understanding Nuclear Fuel and Radiation Decay Chains
Robert Bean, Professor of Nuclear Engineering
Graduate Student: Ian Hamilton, School of Nuclear Engineering
Physics, Room B28
Counselor: David Liu, Undergraduate Student, Aeronautics and Astronautics Engineering
Number of participants ~8

(Project #6) (Green) Plant Biomass to Biofuel
Nate Mosier, Professor of Agricultural and Biological Engineering, Purdue
Graduate students: Julia Burchell, Ximing Zhang (Graduate Students (all from Agricultural and Biological Engineering))
Counselor: Cierra Hughes, Undergraduate Student, Genetic Biology
(ADM Agricultural Innovation Center, 698 Ahlers Drive)
Number of participants ~16

(Project #7) (Dark Gray) Energy Efficient Cooling Solutions
Amy Marconnet, Professor of Mechanical Engineering, Purdue
Graduate Students: Aalok Gaitonde and Jaesik Hahn (both Mechanical Engineering)
Counselor: Vivien Lai
Forney Hall, Room ME 1178 (PEARL Lab)
Number of participants ~8

(Project #8) (Light Gray) Synthesis ZnO Nanofibers for Thermoelectric and Piezoelectric Applications
Na Lu, Professor of Civil Engineering, Purdue
Bahadir Kucukgok, Postdoc Scientist
Graduate Students: Seyedali Ghahari, Ehsan Ghafari, and Yining Feng (all from Civil Engineering)
Counselor: Kelsey Keller, Graduate Student, Civil Engineering
HAMP B257
Number of participants ~8

11:30 AM Depart for lunch
Noon-1:15 PM Lunch – MRGN Cafe
A Dialogue on the Future of the Energy Industry
Ron Holcomb
Chief Executive Officer, Tipmont REMC, Linden, IN

1:15 PM Depart for Hall of Discovery and Learning Center, Room 131
1:30-1:45 PM Bioeconomy
Nate Mosier, Professor of Agricultural and Biological Engineering, Purdue

1:45-2:45 PM Biomass to Biofuel Conversion (Hands-on Enzyme Kit)
Tamica Stubbs, Curriculum and Training Specialist | Northeast U.S. Bio-Rad Laboratories
Break

Catalyst for Energy
Jeffrey Greeley, Associate Professor
Raj Gounder, Assistant Professor
Tej Choksi and Phil Kester, Graduate students
All from Chemical Engineering, Purdue

Guest Coordinator - Ranjita Ghose, Senior Research Engineer,
ExxonMobil Chemical Company, Baytown, TX

Open discussion – DLR 131

Depart for dinner

Guest speaker: Renewables Integration and Grid Challenges
Doug Esamann, Executive Vice President and President of Duke Energy's Midwest and Florida Regions, Duke Energy, Charlotte, NC

Depart to France Cordova Recreational Sports Center

Teachers should finalize their topics and present a rough draft of their lesson plan to their mentor teacher (Hillenbrand Room C102A)

France Cordova Recreational Sports Center Tour

Extracurricular activities

Return to Residence Hall
Thursday, June 23

7:00-8:00 AM Breakfast – Hillenbrand Dining Court

Notes for the day: (1) must have closed toe shoes; (2) must have long pants; no dresses/skirts allowed; (3) taking photos is restricted and prohibited during tour; (4) hard hats will be provided when required; (5) must follow directions during tour; (6) must have safety goggles and lab coat for any hands-on activities and/or research projects.

8:00 AM Depart by bus for CityBus
1250 Canal Rd, Lafayette, IN 47902

8:30-10:00 Tour of CityBus, Greater Lafayette, IN
Tonya Agnew, Manager of Development,

10:15 AM Depart
Tipmont, REMC
403 S Main St, Linden, IN 47955

10:45-11:30 AM Tour – Solar Farm
Jason Monroe, Energy Management Supervisor, Tipmont REMC, Linden, IN

11:45 PM Pick up your box lunch and depart for
Duke Energy Generation Plant
3300 N State Route 63, Cayuga, IN

1:30 PM Tour
John Hays, Duke Energy Midwest Operations

5:00 PM Dinner – Duke Energy Generation Facility

6:30 PM Depart - Bus

8:00 PM Arrive at Hillenbrand Residence Hall

8:00 PM Work on energy lesson plan (teachers) and projects (students)

10:00 PM Teachers submit their lesson final version with completed checklist to mentor teachers by 10:00 PM. Lessons are placed on the DEAP website by Tolulope Omotoso

10:00 PM Return to Residence Hall
Friday, June 24

Notes for the day: (1) must have closed toe shoes; (2) must have long pants; no dresses/skirts allowed; (3) taking photos is restricted and prohibited during tour; (4) hard hats will be provided when required; (5) must follow directions during tour; (6) must have safety goggles and lab coat for any hands-on activities and/or research projects.

7:00-7:45 AM  Breakfast – Hillenbrand Dining Court

8:15 AM      Depart for DLR

8:30-10:00 AM Nuclear Power Jeopardy – DLR 131
  Derek Ebeling-Koning, Consulting Engineer, Westinghouse Electric Company, Pittsburgh, PA
  Robert Bean, Professor, Nuclear Engineering, Purdue

10:00-10:15 AM Break

10:15-11:45 AM Panel on Careers in Industry and Academics – DLR 131
  Ranjita Ghose, Senior Research Engineer, ExxonMobil Chemical Company, Baytown, TX
  Derek Ebeling-Koning, Consulting Engineer, Westinghouse Electric Company, Pittsburgh, PA
  Gozdem Kilaz, Assistant Professor of Aviation Technology, Purdue
  Eckhard Groll, Director of Office of Professional Practice and Reilly Professor of Mechanical Engineering
  Megan Dorton, Senior Associate Director of Admissions
  Purdue staff (CCO)

11:45 AM      Depart for MRGN

Noon        Lunch – MRGN Café
  Lunch with Bowen Engineering Corporation staffs

1:00-1:45 PM  DLR - 131
  Inspiration and Careers in Engineering & Technology
  Bob Bowen, Founder and Chairman of the Board

  Jared Weber, Project Manager
  Scott Heinzelman, Project Engineer
  Chris Durnil, Purchasing Manager
Bowen Engineering Corporation, Indianapolis

1:45-2:30 PM  Sharing Research and Energy Lessons – DLR 131
Teachers and students meet together as research teams to share their presentations from 1:45-2:30 PM

Students
2:30 PM  Students depart for Computer Labs

2:45-4:45 PM  Students to work on projects and fill out post-assessment survey
Stanley Coulter Room 179 and 231
Sally Bane, Assistant Professor of Aeronautics and Astronautics

4:45 PM  Depart for dinner

5:00 PM  Dinner – Hillenbrand Dining Court

Teachers

2:30-4:45 PM  Teachers to present their lessons (3 minutes each) – DLR 131

4:45 PM  Depart for dinner

5:00 PM  Dinner – Hillenbrand Dining Court

6:30  Students: to work on final presentations/projects
Teachers: to fill out post-assessment survey
Computer Labs – Stanley Coulter Room 179 and 231

Hillenbrand Conference Room C102A (private room for teachers)

8:00 PM  Ice Cream Social

10:00 PM  Return to Hillenbrand
Saturday, June 25

Note for the day - Two guests/guardians per student invited to join

7:00-8:00 AM  Breakfast – Hillenbrand Dining Court

8:00 AM  Check out and depart for PMU North Ball Room

8:30 AM  Welcome and introductory remarks  
Tomás Díaz de la Rubia, Ph.D.  
Chief Scientist and Executive Director, Discovery Park

8:35-8:45 AM  Melody Birmingham-Byrd  
President of Duke Energy's Indiana operations

8:45-10:15 AM  Project Presentations (10 minutes each)  
1. Dark Yellow/Solar  
2. Light Yellow/Battery  
3. Blue/Fuel Cells/TEM  
4. Dark Red/Betavoltaic  
5. Light Red/Nuclear  
6. Green/Biofuel  
7. Dark Gray/Heat Transfer  
8. Light Gray/Electrospinning

10:15-10:30 AM  Break

10:30-10:45 AM  Global Impact: Access to Clean Energy  
Steve Katsaros  
CEO, Nokero, Boulder, CO

10:45-11:15 AM  Impact of Energy Academy/Camp Program  
DEAP alumni (students and teachers)

11:15-11:20 AM  Special awards/remarks

11:20-noon  Certificate presentation

12:00 PM  Closing remarks by Pankaj Sharma

1:00 PM  Good bye
Sponsor
• Duke Energy Foundation, Indiana

Co-sponsors and Supporters (5 years celebration)

• Agriculture and Biological Engineering, Purdue
• Bowen Engineering
• Bio-Rad Laboratories
• Chemical Engineering, Purdue
• CityBus Greater Lafayette
• Duke Energy
• Energy Center, Discovery Park, Purdue
• Engineering Education, Purdue
• Faegre Baker Daniels
• General Electric
• Goldwind
• Green Tech America Inc.
• Horizon Educational
• INSPIRE, Purdue
• Central Indiana Section, Institute of Electrical and Electronics Engineers
• Ivy Tech Community College
• Kidwind Project
• Laboratory of Renewable Resource Engineering, Purdue
• Maurice J. Zucrow Lab, Purdue
• Mechanical Engineering, Purdue
• National Energy Education Development
• Nokero International Ltd.
• Ray W. Herrick Laboratories, Purdue
• Renewable Energy Extension, Purdue
• RPiWare, LLC
• Shell Energy
• Siemens Energy Inc.
• Subaru of Indiana Automotive
• Tipmont REMC
• Windstream Technologies Ltd.
• Youth Development and Agricultural Education, Purdue