Sunday, June 18

1:00-2:00 PM Check in/Registration  
   – Earhart Hall, Main Office

2:00 PM Fill out assessment

2:30-3:00 PM Welcome – Earhart Hall, Recreation Lounge West C211  
Pankaj Sharma, Associate Professor of Technology Leadership and Innovation (Courtesy); Managing Director, Energy Academy & Energy Center, Discovery Park, Purdue

2:30-3:00 PM Residence Hall Orientation

3:00-3:30 PM Energy Icebreaker

3:30-4:00 PM Teachers walk to First Street Towers

4:00-5:00 PM Teachers’ session First Street Towers Activity Lounge C166  
   (private room for teachers)  
   Jerry Krockover  
   Professor Emeritus of Earth, Atmospheric, & Planetary Sciences Education, Purdue  
   Anne Dick, (Retired) Science Department Head, Maconaquah High School, Bunker Hill, 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  
   Margie Dobler, Project Lead the Way Teacher, South Adams Schools Berne, IN

3:30-4:30 PM Students’ Session Earhart Hall, Recreation Lounge West C211  
   Research Projects
Expectations

*Sally Bane, Assistant Professor, School of Aeronautics and Astronautics, Purdue*

Working in team project and preparing/delivering a presentation

*Nancy Franke, Teacher, St. Peter’s Lutheran School Columbus, IN School Board Trustee Seymour Community Schools*

Discuss with graduate students about research projects

1. Dark Yellow/Solar - David Rokke
2. Light Yellow/Battery – Jimmy Tang
3. Blue/Fuel Cells/TEM – Shoumya Nandy Shuvo & Ravi Joshi
4. Dark Red/Nuclear Fuel – Mark Brown
5. Light Red/Nuclear Batteries – Olatungi Fulani
6. Green/Biofuel – Ximing Zhang
7. Dark Gray/Heat Transfer – Prachi Kale
8. Light Gray/Electrospinning – Yining Feng

5:00-6:00 PM  Dinner – Earhart Dining Court (Private Dining Room)

6:30 PM  Campus Tour

8:00 PM  Return to Residence Hall

8:30 PM  Complete Daily Assessment
Monday, June 19

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

8:00 AM        Depart for Burton D. Morgan Building (MRGN)

8:15-8:30 AM  Welcome – MGRN 121

Polytechnic Transformation and Opportunities
Gary Bertoline, Purdue Polytechnic Institute Dean and Distinguished Professor

8:30-9:15 AM  Program Inauguration – MGRN 121
Electric Utility Challenges
John Hayes, VP Duke Energy Midwest Operations

9:15-9:40 AM  Terawatt Challenge – Energy for 9 billion people in 2050
Pankaj Sharma

9:40-10:00 AM Program Orientation and Resources
Tolulope Omotoso, Special Project Coordinator, Energy Center, Purdue
Albert (Bert) Chapman
Govt. Information, Political Science, & Economics Librarian/ Professor of Library Science, Purdue

10:00-10:15 AM Break – Take Group Picture

10:15-11:00 AM Energy: Challenges and Opportunities
Rakesh Agrawal, Winthrop E. Stone Distinguished Professor of Chemical Engineering

11:00-11:45 AM Bioenergy
Michael R. Ladisch, Director of the Laboratory of Renewable Resources Engineering (LORRE), and Distinguished Professor of Agricultural and Biological Engineering

Noon        Lunch – MGRN Café/MRGN 112
Tom Easterday, Brent Lank (SIA) & Jason Monroe (Tipmont REMC) to join lunch with participants

1:00-1:10 PM  Autonomous and Connected Vehicles – MRGN 121
Srinivas Peeta, Jack and Kay Hockema Professor in Civil Engineering, Purdue
1:10-1:40 PM  Transportation and Energy Efficiency
   Tom Easterday, Senior Executive Vice President, Subaru of Indiana Automotive, Inc., Lafayette, IN

1:40-2:00 PM  Break

2:00-2:30 PM  Lecture – Electric Grid
   Jason Monroe, Manager of Energy Services, Tipmont REMC, Linden, IN

2:30-2:45 PM  Introduction to Hands-On Activities – Transmission/Distribution
   Nikhil Carneiro
   DEAP 2015 Alumni/Freshman Engineering, Purdue

3:00-4:00 PM  Hands-on activities – Snap Circuits
   Mann Hall Atrium, 1st and 2nd Floor
   Jason Monroe, Manager of Energy Services, Tipmont REMC, Linden, IN

4:00-4:10 PM  Hands-on activity debriefing

4:10-4:20 PM  Move to Morgan 121

4:20-4:40 PM  Wind Energy
   Matthew Jacobson
   Wind Specialist – Lead, Consumers Energy, Unionville, MI

4:40-5:00 PM  Introduction to Wind Turbine Challenge Exercise
   Raymond Pitcher Retired Technology Teacher & Wind Senator, NY

5:00 PM  Depart for dinner

5:30 PM  Dinner at Earhart Dining Court (Private Dining Room)

6:30 -9:00 PM  Background work on projects/Daily Assessment
   Stanley Coulter Room 179 and 231
   Nancy Franke & Alex Lai & Counselors
   First Street Towers Activity Lounge C166 (private room for teachers)

9:00 PM  Extracurricular activities

10:00 PM  Return to Residence Hall
Tuesday, June 20

Notes for the day: (1) must wear safety googles for drones activity; (2) collect lab coats for tomorrow’s research project activity

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

8:00 AM Depart for Mann Hall

8:15-11:45 AM Wind Challenge – Mann Hall Atrium, 1st and 2nd Floor
Raymond Pitcher Retired Technology Teacher & Wind Senator
Matthew Jacobson
Wind Specialist – Lead, Consumers Energy, Unionville, MI

11:45-noon Walk to Earhart Dining Court

Noon Lunch – Earhart Dining Court (Private Dining Room)

1:15-2:00 PM Introduction to Drones & Drone Policy
Tyler Spence, Postdoctoral Policy Fellow, Purdue Policy Research Institute
Aaron Pierce, CEO, Peirce Aerospace, Indianapolis, IN

2:00-2:45 PM Use of Drones in Energy Industries
Gabriel Monroy, Senior Engineer, Maintenance Administration, Maintenance, Environmental & Utilities
Lawrence Fabina, Manager, Continuous Improvement,

ArcelorMittal Burns Harbor, IN

2:45-2:50 PM Instructions for flying drone
Nikhil Carneiro
DEAP 2015 Alumni/Freshman Engineering, Purdue
Gustavo Junco, Instructional Specialist, Secondary Science,
Department of Secondary Academics, Broward County Schools, Ft. Lauderdale, FL

2:50-3:10 PM Travel to TREC

3:10-4:10 PM Drone Demo
4:10-5:00 PM  Fly your own drone

Nikhil Carneiro
DEAP 2015 Alumni/Freshman Engineering, Purdue

Gustavo Junco, Instructional Specialist, Secondary Science,
Department of Secondary Academics, Broward County Schools, Ft. Lauderdale, FL

5:00 PM  Dinner at Earhart Dining Court (Private Dining Room)

6:30 -9:00 PM  Work on projects (students) and energy lessons (teachers)
Complete Daily Assessment
Nancy Franke & Alex Lai
Stanley Coulter Room 179 and 231
First Street Towers Activity Lounge C166 (private room for teachers)

9:00 PM  Extracurricular activities

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

Notes for the day: (1) must have closed toe shoes; (2) must have long pants; no dresses/skirts allowed; (3) must follow directions during research project; (4) must wear 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 – Earhart Dining Court
8:00 AM Depart for 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 – Ryan Ellis, Scott McClary, David Rokke, Joseph Andler (all from Chemical Engineering)
Counselor: Adrianne Glaser, Undergraduate Student, Microbiology
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 & Jimmy Tang
Counselor: Gaurav Inamke, Graduate Student Mechanical Engineering/Vivien Lai, DEAP & Purdue Alumni
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: Phil Kester, Shoumya Nandy Shuvo, Ravi Joshi, Paulami Majumdar, Tej Choksi
Counselor: Jenny Lindholm, Undergraduate Student, Elementary/Special Education
Birck Nanotechnology Center, Room 2001
Number of participants ~16

(Project #4) (Dark Red) Nuclear Batteries:
Theory of Operation, Characterization methods, and Uses in Navy & Defense
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: Mark Brown & Ian Hamilton (School of Nuclear Engineering)
Physics, Room B28
Counselor: Rooney Kim, Graduate Student Civil Engineering
Number of participants ~8

(Project #5) (Light Red) Understanding Nuclear Fuel and Radiation Decay Chains
Robert Bean, Professor of Nuclear Engineering
Graduate Student: Adam Dix
POTR B28
Counselor: Olatunji Fulani, Graduate Student, Electrical and Electronics 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
Counselor: Iris O'Donnell Bellisario, Undergraduate Student, Transdisciplinary Studies
(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: Prachi Kale, Jaesik Hahn
Counselor: Prachi Kale, Graduate Student, Mechanical Engineering
Mechanical Engineering, Room ME 1178 (PEARL Lab)
Number of participants ~8

(Project #8) (Light Gray) Synthesis of ZnO Nanofibers for Thermoelectric and Piezoelectric Applications
Na Lu, Professor of Civil Engineering, Purdue
Graduate Students: Ehsan Ghafari, Yining Feng
Counselor: Robert Marek/Drake Krohn
HAMP B257, 550 W Stadium Ave. Lyles School of Civil Engineering
Number of participants ~8

11:30 AM Depart for lunch
Noon-1:15 PM Lunch – Earhart Dining Court (Private Dining Room)
1:15 – 1:30 PM Walk to Mann Hall
1:30 – 4:30 pm Energy Education Exercises
Station 1 – Photovoltaic Challenge (Solar Angle Kit)

Station 2 - Wind Farm Challenge
Vivien Lai, Purdue Alumni
Mathew Jacobson, Wind-Specialist – Lead, Consumer Energy, Unionville, MI

Station 3 – Grid Challenge
Jason Monroe, Tipmont REMC, Linden, IN

Station 4 - LEGO MINSTORM Challenge
Roger Tormoehlen
Professor of Agriculture and Biological Engineering
Richard Fox
Computer Analyst, Youth Development and Agricultural Education

4:30-4:50 PM Introduction to Duke Energy Sustainability Simulation – MGRN 121
Kevin Leahy, Environmental and Energy Policy, Duke Energy, Cincinnati, OH

4:50 PM Depart for dinner
<table>
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<tr>
<th>Time</th>
<th>Event</th>
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<tr>
<td>5:00 PM</td>
<td>Dinner – Earhart Dining Court (Private Dining Room)</td>
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<tr>
<td>6:30 PM</td>
<td>Depart to France Cordova Recreational Sports Center</td>
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<tr>
<td>7:00-9:00 PM</td>
<td>Teachers should finalize their topics and present a rough draft of their lesson plan to their mentor teacher (First Street Towers Activity Lounge C166)</td>
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<tr>
<td>6:45-8:00 PM</td>
<td>France Cordova Recreational Sports Center Tour</td>
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<tr>
<td>8:00-8:30 PM</td>
<td>Complete Daily Assessment</td>
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Thursday, June 22

7:00-8:00 AM Breakfast – Earhart Dining Court (Private Dining Room)

**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) take your DEAP branded t-shirts along for the trip.

8:15- 9:00 AM A Dialogue on the Future of the Energy Industry – MRGN 121
*Ron Holcomb*
*Chief Executive Officer, Tipmont REMC, Linden, IN*

9:00- 9:45 AM Duke Energy Sustainability Simulation Discussion/Awards
*Kevin Leahy, Environmental and Energy Policy, Duke Energy, Cincinnati, OH*

9:45- 10:15 AM Explore Our Solar System – A self-guided tour
(next to Hall of Discovery Learning and Research Center Building)

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

10:45-11:30 AM Tour – Solar Farm
*Jason Monroe, Manager of Energy Services, Tipmont REMC, Linden, IN*

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

1:30 PM Tour
*John Hayes, VP Duke Energy Midwest Operations*
*Brian Wininger, Technical Manager, Cayuga Generating Station*

5:00 PM Dinner – Duke Energy Generation Facility

6:30 PM Depart - Bus

8:00 PM Arrive at Purdue

8:00 PM Work on energy lesson plan (teachers) and projects (students)/Complete Daily Assessment
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 Tolu Omotoso

10:00 PM  Return to Residence Hall
Friday, June 23

7:00-7:45 AM  Breakfast – Earhart Dining Court (Private Dining Room)

8:15 AM  Depart for MRGN

8:30-10:00 AM  Nuclear Power Jeopardy – MRGN 121
   Derek Ebeling-Koning, Consulting Engineer, Westinghouse Electric Company, Pittsburgh, PA
   Robert Bean, Professor, Nuclear Engineering, Purdue

10:00-10:15 AM  Break

10:15-11:15 AM  Panel on STEM/Energy Careers in Industry and Academics – MGRN 121
   Panelists
   Derek Ebeling-Koning, Consulting Engineer, Westinghouse Electric Company, Pittsburgh, PA
   Gozdem Kilaz, Assistant Professor of Energy Technology, Purdue
   Megan Dorton, Senior Associate Director of Admissions, Purdue
   Angela Thompkins, Director of Acquisition, Diversity & Inclusion, CMS Energy
   Wayne Leuthold, Technologist-Design, Electric Power Division, Nuclear Technical Support, Caterpillar, Lafayette, IN
   Moderator:
   Drake Krohn, Graduate Student, Civil Engineering, Purdue

11:15-12:00 PM  Buildings of the Future
   Dave Hopping, President Siemens Building Technologies, Americas

Noon  Lunch – MRGN Café/Room 112
   Lunch with Dave Hopping
   Lunch with Bowen Engineering Corporation staffs

1:00-1:45 PM  MRGN 121
   Inspiration and Careers in Engineering & Technology
   Bob Bowen, Founder and Chairman
   Chris Durnil, Purchasing Manager
   Teddy Deahl, Account Executive – Energy Engineer
   Bowen Engineering Corporation, Indianapolis
1:45-2:00 PM Break

Students
2:00 PM Students depart for Computer Labs
2:15-4:45 PM Students to work on projects and fill out post-assessment survey
Stanley Coulter Room 179 and 189
4:45 PM Depart for dinner
5:00 PM Dinner – Earhart Dining Court (Private Dining Room)

Teachers
2:00-2:30 PM Engaging Schools/Partnerships/Writing Grants/Opportunities – MRGN 121
Amber Fogarty, Learning and Development, School To Work Coordinator/Grant Writer, Consumers Energy, Lansing Service Center
2:30-4:45 PM Teachers to present their lessons (5 minutes each) – MRGN 121
4:45 PM Depart for dinner
5:00 PM Dinner – Earhart Dining Court
6:30 Students: to work on final presentations/projects & fill out post-assessment survey. Computer Labs – Stanley Coulter Room 179 and 231
Teachers: to fill out post-assessment survey. First Street Towers Activity Lounge C166 (private room for teachers)
8:00 PM Games Social
9:00 PM Get ready for tomorrow’s departure (pack bags etc.)
Saturday, June 24

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

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

8:00 AM Check out and depart for Class of 1950

8:30 AM Welcome and introductory remarks
Suresh Garimella, Executive Vice President for Research and Partnerships

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/Nuclear Batteries
5. Light Red/Nuclear Fuel
6. Green/Biofuel
7. Dark Gray/Heat Transfer
8. Light Gray/Electrospinning

10:15-10:45 AM Break

10:45-11:15 AM Lawrence F. Fabina Manager, Continuous Improvement, ArcelorMittal Burns Harbor, Indiana
Joseph A. (je) Miller jr., Vice President, Central Engineering and Services, Duke Energy, Charlotte, NC

11:15-11:20 AM Special awards/remarks
Jim Cornelissen, Plant Manager, Tate and Lyle, Lafayette, Indiana
Chris Durnil, Purchasing Manager, Bowen Engineering Corporation, Indianapolis, Indiana
Lawrence F. Fabina Manager, Continuous Improvement, ArcelorMittal Burns Harbor, Indiana
Dan Rhodes, Manager, Indiana Community Relations, Duke Energy, Lafayette, Indiana
Angela Thompkins, Director of Talent Acquisition, Diversity & Inclusion, CMS Energy, Jackson, Michigan

11:20-noon Certificate/Checks presentation

12:00 PM Closing remarks and Good Bye by Pankaj Sharma
Sponsor
• Duke Energy Foundation, Indiana

Co-sponsors and Supporters
• ArcelorMittal
• Agriculture and Biological Engineering, Purdue
• Bowen Engineering
• CMS Energy
• Chemical Engineering, Purdue
• Civil Engineering, Purdue
• Duke Energy
• Energy Center, Discovery Park, Purdue
• Kidwind Project
• Laboratory of Renewable Resource Engineering, Purdue
• Materials Engineering, Purdue
• Mechanical Engineering, Purdue
• Nuclear Engineering, Purdue
• Purdue Policy Research Institute
• Renewable Energy Extension, Purdue
• Subaru of Indiana Automotive
• Tate & Lyle
• Tipmont REMC
• Youth Development and Agricultural Education, Purdue