Sunday, June 17

1:00-2:00 PM    Check in/Registration
                – Honors Residence, North Building, Main Office

2:00 PM    Fill out Assessment

2:30-3:15 PM    Welcome and Orientation – Honors Residence Hall, North Building, Honors Hall
                Pankaj Sharma, Professor of Engineering Technology (Courtesy); Managing Director, Energy Academy & Energy Center, Discovery Park, Purdue

3:15-3:45 PM    Residence Hall Orientation

3:45-4:00 PM    Energy Icebreaker

4:00-4:10 PM    Energy Web Resources
                Albert (Bert) Chapman, Govt. Information, Political Science, & Economics Librarian/ Professor of Library Science, Purdue

4:10-5:00 PM    **Teachers’ Session**
                Teacher Lesson Plans - Honors Residence, North Building, 1143
                Jerry Krockover, Professor Emeritus of Earth, Atmospheric, & Planetary Sciences Education, Purdue

4:10-5:00 PM    **Students’ Session**
                Research Projects - Honors Residence, North Building, Honors Hall
                General Expectations
                Laura Swessel, Science Teacher, Honors and ACP Physics, Earth/Space, Scientific Research, Our Lady of Providence Jr/Sr High School, Clarksville, IN
Working in Team Project and Preparing/Delivering a Presentation
Leigh-Ann Cruz, Science Teacher, Chemistry, Molecular Biology, and Scientific Research, Cardinal Ritter High School, Indianapolis, IN
Robyn Embry, Science Teacher, Earth/Space Science, AP Environmental Science, Mitchell High School, Mitchell, IN

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 18

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

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

8:30-8:40 AM  Welcome to Discovery Park – MRGN 121
   Tomás Díaz de la Rubia, Chief Scientist and Executive Director of Discovery Park, Purdue

8:40-8:55 AM  Welcome to the Duke Energy Academy at Purdue
   Jay Akridge, Provost & Executive Vice President for Academic Affairs & Diversity, Professor of Agricultural Economics, Purdue

9:00-10:00 AM  Program Inauguration – MRGN 121
   Melody Birmingham, President of Duke Energy Indiana

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

10:15-11:00 AM  Terawatt Challenge – Energy for 9 Billion People in 2050
   Pankaj Sharma Professor of Engineering Technology (Courtesy); Managing Director, Energy Academy & Energy Center, Discovery Park, Purdue

11:00-11:45 AM  Powering the Future: An Outlook on Energy
   Fabio Ribeiro, Professor of Chemical Engineering, Purdue, Director, CISTAR

11:45-noon  Walk to Earhart Dining Court

Noon  Lunch – Earhart Dining Court (Private Dining Room)

1:10-1:45 PM  Bio-economy
   Nate Mosier, Professor of Agricultural and Biological Engineering, Purdue

1:45-2:00 PM  Break

2:00-2:30 PM  Lecture – Electric Grid
   Jason Monroe, Vice President of Essential Services, Tipmont REMC, Linden, IN

2:30-2:45 PM  Introduction to Hands-On Activities – Transmission/Distribution
   Anna-Nikol Georgiev, Counselor, Undergraduate Student, Purdue
3:00-4:00 PM  Hands-on Activities – Snap Circuits  
Mann Hall Atrium, 1st and 2nd Floor  
Jason Monroe, Vice President of Essential Services, Tipmont REMC, Linden, IN

4:00-4:10 PM  Hands-on Activity Debriefing  
Jason Monroe, Vice President of Essential Services, Tipmont REMC, Linden, IN

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

4:20-4:40 PM  Wind Energy  
Chris McNalley, Senior Engineer II, CMS

4:40-5:00 PM  Introduction to Wind Turbine Challenge Exercise  
Michael Arquin, Director of the KidWind Project, Minneapolis, MN

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 189  
Honors Residence, North Building, 1143 (private room for teachers)

9:00 PM  Extracurricular Activities

10:00 PM  Return to Residence Hall
Tuesday, June 19

Notes for the day: (1) must wear safety goggles 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
*Michael Arquin, Director of the KidWind Project, Minneapolis, MN*

11:45-noon  Walk to Earhart Dining Court

Noon  Lunch – Earhart Dining Court (Private Dining Room)

1:15-1:45 PM  International Geopolitics in Energy
*Albert (Bert) Chapman, Govt. Information, Political Science, & Economics Librarian/ Professor of Library Science, Purdue*

1:45-2:00 PM  Energy & Manufacturing
*Lawrence Fabina, Manager, Continuous Improvement, ArcelorMittal Burns Harbor, IN*

2:00-2:15 PM  Ensuring Reliability of Equipment in Energy Industries
*Thomas Moskovich, Reliability Engineer, BHW-MEU-Maintenance Technology, ArcelorMittal, Burns Harbor, IN*

2:15-2:35 PM  Introduction to Drones & Drone Policy
*Connor Cromwell, Undergraduate Student, Purdue*

2:35-2:50 PM  Drones & Drones Sensors in the Energy Industries
*Eric Johnson, Chief Structural & API Inspector, CATSI Inc., Valparaiso, IN*

2:50-3:05 PM  Use of Drones in the Energy & Manufacturing Industries
*Gabriel Monroy, Senior Engineer, Maintenance Administration, Maintenance, Environmental & Utilities, ArcelorMittal, Burns Harbor, IN*

3:05-3:20 PM  Instructions for Flying Drone
*Megan Ledford, Counselor, Undergraduate Student, Purdue
Connor Cromwell, Undergraduate Student, Purdue*
3:20-3:35 PM  Travel to TREC

3:35-3:55 PM  Drone Demo
   Eric Johnson, Chief Structural & API Inspector, CATSI Inc.
   Thomas Moskovich, Reliability Engineer, BHW-MEU-Maintenance Technology, ArcelorMittal, Burns Harbor, IN
   Gabriel Monroy, Senior Engineer, Maintenance Administration, Maintenance, Environmental & Utilities, ArcelorMittal
   Lawrence Fabina, Manager, Continuous Improvement, ArcelorMittal

3:55-5:00 PM  Fly your Own Drone
   Megan Ledford, Counselor, Undergraduate Student, Purdue
   Connor Cromwell, Undergraduate Student, Purdue

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

6:30 PM  Depart to France Cordova Recreational Sports Center

6:45-8:50 PM  France Cordova Recreational Sports Center Tour

9:00 PM  Extracurricular Activities/Complete Daily Assessment

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

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 AM 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 Rodkke, Joseph Andler, Kyle Weidman
Counselor: Megan Ledford
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 & Mihit Parekh
Counselor: Domenique Lumpkin
Forney Hall, Room 2184
Number of participants ~8

(Project #3) (Blue) Fuel Cell: Catalysts for Energy Innovation
Jeffrey Greeley, Assistant Professor, Chemical Engineering, Purdue
Raj Gounder, Assistant Professor, Chemical Engineering, Purdue
Graduate Students: Casey Jones, Laura Wilcox, Pushar Ghanekar
Counselor: Halie Davis  
FRNY Hall, G124  
Number of participants ~16

(Project #4) (Red) Understanding Nuclear Fuel and Radiation Decay Chains  
Robert Bean, Professor of Nuclear Engineering  
Graduate Student: Luke Tyree  
POTR B28  
Counselor: Chuhao Wu  
Number of participants ~16

(Project #5) (Green) Plant Biomass to Biofuel  
Nate Mosier, Professor of Agricultural and Biological Engineering, Purdue  
Graduate students: Elena Molina, Jonathan Overton  
Counselor: Kody Orr  
(ADM Agricultural Innovation Center, 698 Ahlers Drive)  
Number of participants ~16

(Project #6) (Dark Gray) Energy Efficient Cooling Solutions  
Amy Marconnet, Professor of Mechanical Engineering, Purdue  
Graduate Students: Albraa Alsaaati, Xinyan Gu, Yexin Sun  
Counselor: Nade Liang  
Mechanical Engineering, Room ME 1178 (PEARL Lab)  
Number of participants ~8

(Project #7) (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: Anna Nikol-Georgiev  
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 – 4:50 pm  Energy Education Exercises
Station 1 – Photovoltaic Challenge (Solar Angle Kit)  
*Michael Arquin, Director of the KidWind Project, Minneapolis, MN*

Station 2 - Wind Farm Challenge  
*Kody Orr, Counselor, Undergraduate Student, Purdue*

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*

4:50 PM  Depart for Dinner

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

6:30 -9:00 PM  Background Work on Projects/Daily Assessment  
Stanley Coulter Room 179 and 189  
Honors Residence, North Building, 1143 (private room for teachers)

7:00-9:00 PM  Teachers should finalize their topics and present a rough draft of their lesson plan to their mentor teacher (Honors Residence, North Building, 1143)

9:00 PM  Extracurricular activities

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

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/leggings 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.

8:15-9:45 AM  **Student Session**
Panel on STEM/Energy Careers in Industry and Academics – MGRN 121

**Panelists**
Gozdem Kilaz, Assistant Professor of Energy Technology, Purdue
Angela Thompkins, Director of Acquisition, Diversity & Inclusion, CMS Energy (via skype)
Wayne Leuthold, Technologist-Design, Electric Power Division, Nuclear Technical Support, Caterpillar, Lafayette, IN
Raj Gounder, Assistant Professor, Chemical Engineering, Purdue
Casey Jones and Laura Wilcox, 2nd Year Ph.D. Students, Purdue
Melanie Brunet Torres, Undergraduate Student, Purdue
Laura Cummings, Science Teacher, Chemistry, Biology, AP Chemistry, Herron High School, Indianapolis, IN

**Teacher Session**
Getting Grants and Networking – MRGN 129
Gerald Krockover, Professor Emeritus of Earth, Atmospheric, & Planetary Science Education

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, Vice President of Essential 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  Extracurricular Activities  

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 Vivien Lai  

10:00 PM  Return to Residence Hall  

* For a complete list of people involved with the Cayuga Generating Station Tour, please see page 15
Friday, June 22

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

8:00 AM Depart for Electrical Engineering

8:15-9:30 AM Nuclear Jeopardy – EE170
Derek Ebeling-Koning, Consulting Engineer, Westinghouse Electric Company, Pittsburgh, PA
Robert Bean, Professor, Nuclear Engineering, Purdue

9:30-11:30 AM Nuclear Tour
Derek Ebeling-Koning, Consulting Engineer, Westinghouse Electric Company – EE005
Robert Bean, Professor, Nuclear Engineering, Purdue
Wayne Leuthold, Technologist-Design, Electric Power Division, Nuclear Technical Support, Caterpillar – EE115

Group 1 – Blue + Solar Cell
Group 2 – Gray + Battery
Group 3 – Red + 4 mentor teachers
Group 4 – Green + 4 mentor teachers

<table>
<thead>
<tr>
<th>Time</th>
<th>Group 1</th>
<th>Group 2</th>
<th>Group 3</th>
<th>Group 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:30 – 9:55</td>
<td>Nuclear Reactor</td>
<td>EE115</td>
<td>EE005</td>
<td>Nuclear Detection</td>
</tr>
<tr>
<td>9:55 – 10:00</td>
<td>Transition</td>
<td>Transition</td>
<td>Transition</td>
<td>Transition</td>
</tr>
<tr>
<td>10:00 – 10:25</td>
<td>Nuclear Detection</td>
<td>Nuclear Reactor</td>
<td>EE115</td>
<td>EE005</td>
</tr>
<tr>
<td>10:25 – 10:30</td>
<td>Transition</td>
<td>Transition</td>
<td>Transition</td>
<td>Transition</td>
</tr>
<tr>
<td>10:30 – 10:55</td>
<td>EE005</td>
<td>Nuclear Detection</td>
<td>Nuclear Reactor</td>
<td>EE115</td>
</tr>
<tr>
<td>10:55 – 11:00</td>
<td>Transition</td>
<td>Transition</td>
<td>Transition</td>
<td>Transition</td>
</tr>
<tr>
<td>11:00 – 11:25</td>
<td>EE115</td>
<td>EE005</td>
<td>Nuclear Detection</td>
<td>Nuclear Reactor</td>
</tr>
</tbody>
</table>

Noon Lunch – MRGN Café/Room 112
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
2:00-2:30 PM  Battery Safety  
*Vilas Pol, Associate Professor, Chemical Engineering, Purdue*

**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 Beering B286

4:45 PM  Depart for dinner

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

**Teachers**

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 189

**Teachers:** to fill out post-assessment survey. Honors Residence, North Building, 1143 (private room for teachers)

8:00 PM  Games Social

9:00 PM  Get Ready for Tomorrow’s Departure (Pack Bags etc.)
Saturday, June 23

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

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

8:00 AM  Depart for Wilmeth Active Learning Center Room 1055

8:30 AM  Welcome and Introductory Remarks
Stan Pinegar, Vice President of Legislative and Regulatory Affairs, 
Duke Energy

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

10:15-10:45 AM  Break

10:45-11:15 AM  Lawrence F. Fabina Manager, Continuous Improvement, 
ArcelorMittal Burns Harbor, IN
John Mengel, Vice President & General Manager, ArcelorMittal, 
Burns Harbor, IN

11:15-11:20 AM  Special Awards/Remarks

11:20-noon  Certificate/Checks Presentation

12:00 PM  Closing remarks and Good Bye by Pankaj Sharma

12:30 PM  Check out of Residence Hall
Thank you to the people at Cayuga for giving us a tour of the Cayuga Power Plant!

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bill Luke</td>
<td>Cayuga Station, General Manager</td>
<td>Welcome/Kick-off - Unable to attend - Brian Wininger</td>
</tr>
<tr>
<td>Chris DeMyer</td>
<td>Cayuga Station, Senior Health &amp; Safety Professional, CSP</td>
<td>Kick off/ Safety</td>
</tr>
<tr>
<td>Tom Knapke</td>
<td>Cayuga Station, Lead Environmental Health and Safety Professional</td>
<td>Kick off/ Plant History</td>
</tr>
<tr>
<td>Eric Lutz</td>
<td>Cayuga Station, Chemical Supervisor</td>
<td>Presenter</td>
</tr>
<tr>
<td>Megan Nevill</td>
<td>Duke, Generation Engineering Senior Engineer</td>
<td>Presenter</td>
</tr>
<tr>
<td>Jason Myers</td>
<td>Cayuga Station, Production Superintendent</td>
<td>Presenter - Unable to attend - Eric Lutz will Present</td>
</tr>
<tr>
<td>Jeremy Price</td>
<td>Cayuga Station, Production Superintendent</td>
<td>Tour Guide</td>
</tr>
<tr>
<td>Steve Boardman</td>
<td>Cayuga Station, Production Coordinator</td>
<td>Tour Guide/ Bus to Verm</td>
</tr>
<tr>
<td>Andrew Woestman</td>
<td>Cayuga Station, Reg Serv, Mechanical Engineer II</td>
<td>Tour Guide</td>
</tr>
<tr>
<td>Brian Wininger</td>
<td>Cayuga Station, Technical Manager</td>
<td>Presenter</td>
</tr>
<tr>
<td>Cortney Hawkins</td>
<td>Cayuga Station, Senior Engineer Technologist</td>
<td>Presenter</td>
</tr>
<tr>
<td>Dave Turner</td>
<td>Cayuga Station, Senior Engineer, PE</td>
<td>Tour Guide</td>
</tr>
<tr>
<td>Gary Clark</td>
<td>Cayuga Station, Project Manager</td>
<td>Tour Guide</td>
</tr>
<tr>
<td>Pat Robinson</td>
<td>Cayuga Station, Engineer III</td>
<td>Tour Guide</td>
</tr>
<tr>
<td>Tim Okerson</td>
<td>Cayuga Station, Senior Engineering Technologist</td>
<td>Tour Guide</td>
</tr>
<tr>
<td>Mike Vorderbrueggen</td>
<td>Vermillion, General Manager</td>
<td>Speaker/CT Guide</td>
</tr>
<tr>
<td>Brian Lee</td>
<td>Vermillion, Production Superintendent</td>
<td>Speaker/CT Guide</td>
</tr>
<tr>
<td>Tony Cornelius</td>
<td>Duke Regional Services Engineering Manager</td>
<td>Tour Guide</td>
</tr>
<tr>
<td>Benjamin Kelly</td>
<td>Coop/Summer Student</td>
<td>Tour Guide</td>
</tr>
<tr>
<td>Vance Oetjen</td>
<td>Coop/Summer Student</td>
<td>Tour Guide</td>
</tr>
<tr>
<td>Andrew Duke</td>
<td>Coop/Summer Student</td>
<td>Tour Guide</td>
</tr>
<tr>
<td>Carty Butler</td>
<td>Cayuga Station, Mechanical Supervisor</td>
<td>Tour Support - Misc</td>
</tr>
<tr>
<td>David Edwards</td>
<td>Cayuga Station, Work Management Scheduler</td>
<td>Tour Support - Sound</td>
</tr>
<tr>
<td>Tonya Williams</td>
<td>Cayuga Station, Contract Resource Coordinator</td>
<td>Tour Support - Safety</td>
</tr>
<tr>
<td>Terry Cole</td>
<td>Cayuga Station, Contract Resource Coordinator</td>
<td>Tour Support - Set Up</td>
</tr>
<tr>
<td>Tracey Osborn</td>
<td>Cayuga Station, Senior Engineering Technologist</td>
<td>Tour Support - Misc</td>
</tr>
</tbody>
</table>