Sunday, June 21

1:00-2:00 PM  Check in/Registration/Campus Boilermaker tour/Purdue Pete – Hillenbrand Hall, Rec Lounge C103

2:00 PM  Depart by bus

2:15-2:30 PM  Welcome – STEW 214 ABCD
Pankaj Sharma, Associate Professor of Technology Leadership and Innovation (Courtesy); Managing Director, Energy Academy & Energy Center, Global Sustainability Institute, Discovery Park, Purdue

2:30-3:00 PM  Energy Icebreaker

3:00-4:15 PM  Teachers’ session by Jerry Krockover – STEW 310
Professor Emeritus of Earth, Atmospheric, & Planetary Sciences Education, Purdue
Margie Dobler, Project Lead the Way Teacher, South Adams Schools, Berne, Indiana
Anne Dick, Science Department Head, Maconaquah High School, Bunker Hill, Indiana
Yamila Cancel-Sanchez, Science and Math Teacher, The Academy of Science and Entrepreneurship, Bloomington, Indiana

3:00-4:15 PM  Students’ session – STEW 214 ABCD
Sally Bane, Assistant Professor, School of Aeronautics and Astronautics, Purdue
Ann Reimers, Albert Einstein Distinguished Educator Fellow, Department of Energy, Office of Science, Workforce Development for Teachers and Scientists
Laura Swessel, Science, Earth/Space, and Honors Physics, Providence High School, Clarksville, Indiana
Rachel Williamson, Mississinewa High School & Middle School, Gas City, IN

4:30 PM  Group Photo - Purdue Memorial Union Lawn
4:45 PM Networking
North Ball Room, Purdue Memorial Union

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

Maureen McCann, Professor of Biological Sciences; Director, Energy Center and Department of Energy – Center for Direct Catalytic Conversion of Biomass to Biofuel

5:20 PM Energy: Challenges and Opportunities
Rakesh Agrawal, Winthrop E. Stone Distinguished Professor of Chemical Engineering

6:00 PM Dinner

6:30 PM Electricity: Empowering America’s Innovation
Brian Wolff
Executive Vice President, Public Policy and External Affairs, Edison Electric Institute, Washington D.C.

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

8:00 PM Depart for Hillenbrand Residence Hall - bus

Monday, June 22

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

8:00 AM Depart

8:15-8:30 AM Welcome – MRGN 121
Beth McCuskey
Vice Provost for Student Life, Purdue

8:30-8:45 AM Energy Sustainability
Mariann Quinn
Sustainability Director, Duke Energy Business Services

8:45-9:00 AM Principles: Electricity Transmission and Distribution

9:15-10:00 AM Hands-on Activity: Snap Circuits – Mann Hall Atrium
10:00-10:15 AM  Break

10:15-11:15 AM  Internet of Things – MRGN 121

Vijay Raghunathan  
Associate Professor of Electrical and Computer Engineering, Purdue  
David Lawrence  
Technology Development Manager, Emerging Technology Office, Duke Energy  
Dwayne Bradley  
Technology Development Manager, Emerging Technology Office, Duke Energy  
Steve Hinkel  
Director of Advanced Technology Applications, Duke Energy

11:15-11:30 AM  Transport to Campus – PMU Faculty Lounge

11:30 AM  Lunch – East and West Faculty Lounge, PMU

(East Faculty Lounge) Teachers with Jerry Krockover/Margie Dobler/Anne Dick/Yamila Cancel-Sanchez

Resources and Opportunities for Teachers  
Ann Reimers  
Energy3D: Learning to Build a Sustainable Future  
Senay Purzer  
Assistant Professor, Engineering Education, Purdue  
Writing Successful Proposals to Secure Grants  
Sally Bond  
Assistant Director for Research Development Services, Proposal Coordination, Office of the Executive Vice President for Research and Partnership, Purdue  
– East Faculty Lounge

(West Faculty Lounge) Students with Sally Bane (tentative)/Laura Swessel/Rachel Williamson/Ann Reimers/Faculty and Graduate Students

Resources and Opportunities for Students  
Ann Reimers  
Albert Einstein Distinguished Educator Fellow, Department of Energy, Office of Science, Workforce Development for Teachers and Scientists  
Conducting Your Research Projects
Sally Bane  
Assistant Professor, School of Aeronautics and Astronautics, Purdue  
Web Resources for Energy Research Projects

Bert Chapman  
Professor of Humanities, Social Sciences, Education and Business, Purdue University

1:00 PM  Depart for Stanley Coulter Computer Labs 277, 283, 289

1:15-2:00 PM  Interactive Program - [http://energychallenge.duke-energy.com/](http://energychallenge.duke-energy.com/)

2:00-4:45 PM  Internet of Things (to be continued)

4:45 PM  Depart for dinner

5:00 PM  Dinner at Meredith Dining Hall

6:30 -9:00 PM  Background work on projects  
BRNG B274, B275, B282, B286  
Hillenbrand Conference Room C102A (private room for teachers)

9:15 PM  (optional) Internet of Things: Launching Rockets – Intramural Fields

Tuesday, 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 labs coat for any hands-on activities and/or research projects.

8:00 AM  Depart

8:15-8:20 am  High Performance Buildings – MRGN 121  
Jim Braun  
Herrick Professor of Mechanical Engineering

8:20-9:00 AM  Buildings of the Future  
David Hopping  
President Building Technologies Americas  
Siemens Energy, Inc.,
9:15-10:00 AM   Work on your projects (students) and energy lessons (teachers)

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

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

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

1:30 PM  Tour
    Tom Short, Station Manager, Duke Energy

5:00 PM  Dinner – Duke Energy Generation Facility

6:30 PM  Depart - Bus

8:00 PM  Arrive at Hillenbrand Residence Hall

Wednesday, 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 labs coat for any hands-on activities
    and/or research projects.

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

8:00 AM  Depart

8:10 AM  Remarks and introduction – MRGN 121
    Julie Griffith
    Vice President for Public Affairs, Purdue

8:15-9:00 AM  Future of Power Generation and Electricity Grid – MRGN 121
    Caren Anders
    Vice President, Vice President, Emerging Technology and
    Transmission Affairs, Duke Energy, Charlotte, North Carolina
9:00-9:15 AM  Introduction to Hands-on Activities – Energy Education Exercises

9:15-11:30 am  Hands-on Activities: Power Transmission and Distribution; Solar and Wind Farm Challenge; Solar Angle Challenge; LEGO Mindstorm Challenge – Mann Hall Atrium, 1st and 2nd Floor

Anthony J. Covarrubias, EIT, LEED Green Assoc.
Graduate Energy Engineering Intern (Physical Facilities); DEAP Office Assistant (Energy Center, Discovery Park)
Vivien Lai, Undergraduate Student, Biological Sciences, Purdue
Roger Tormoehlen
Department Head and Professor, Youth Development and Agricultural Education
Richard Fox
Computer Analyst, Youth Development and Agricultural Education

11:30 AM  Lunch – MRGN Café (pick up your lunch and move to MRGN 121)

Noon  A Dialogue on the Future of the Energy Industry
Ron Holcomb (confirmed)
Chief Executive Officer, Tipmont REMC, Linden, Indiana

1:00 PM  Depart for research projects

1:30-4:30 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, Robert Boyne, Mark Koeper, Emre Gencer (all from Chemical Engineering)
Counselor: Kyle Isch, Physics Education
Forney Hall 3140
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 Arthur Dysart (all from Chemical Engineering)
Counselor: Jennifer Carroll, Department of Chemistry
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: Viktor Cybulskis, Chang Wan, Tej Choksi (all from Chemical Engineering)
Counselor: Ana Carneiro, Undergraduate Student, School of Chemical Engineering
Counselor: Derek Schwanz, Graduate Student, Materials Engineering
Birck Nanotechnology Center, Room 1269/1001
Number of participants ~8

(Project #4) (Dark Red) Experimental Measurement of Temperature and Species in a Pre-mixed Laminar Flame
Robert Lucht, Ralph and Bettye Bailey Professor of Combustion in Mechanical, Purdue
Jay Gore, Reilly University Chair Professor of Engineering, Purdue
Richard Arens, Retired from First Energy Corporation, Oregon, Ohio
Post-doctoral Student: Dr. Aman Satija
Counselors: Aalok Gaitonde and Pooja Shah, Graduate Students (all from Mechanical Engineering)
Maurice J. Zucrow Laboratories (Zucrow Labs), ZL 1, Room # 102
Number of participants ~6

(Project #5) (Red Light) The Energy Challenge – Meeting Our Electricity Needs While Addressing Climate Change
Mariann Quinn, Director of Sustainability, Duke Energy, Cincinnati, Ohio
Natalie Carroll, Professor of Youth Development, Agriculture Education, and Agriculture and Biological Engineering, Purdue
Counselor Justin S. Richter, Graduate Student, Environmental and Ecological Engineering
Stanley Coulter Computer Lab 277
Number of participants ~8
(Project #6) (Green) Plant Biomass to Biofuel
   *Nate Mosier, Professor of Agricultural and Biological Engineering, Purdue*
   Graduate students - Ximing Zhang, Barron Hewetson, Graduate Students (all from Agricultural and Biological Engineering)
   *Counselor: Helena Avila-Arias, Graduate Student, Department of Agronomy*
   (ADM Agricultural Innovation Center, 698 Ahlers Drive)
   Number of participants ~16

(Project #7) (Purple) Utilizing Solar Energy to Live Sustainably
   *Şenay Purzer, Assistant Professor, School of Engineering Education, Purdue*
   Jason Monroe, Energy Management Supervisor, Tipmont REMC, Linden, Indiana
   Graduate students: Molly Goldstein, Engineering Education; AJ Covarrubias Civil Engineering
   *Counselor: Alan Poon, Undergraduate Student, Biomedical Engineering*
   Wang Hall 3500 (Northwestern Avenue)
   Number of participants ~16

4:45 PM  Depart for dinner
5:00 PM  Dinner - Hillenbrand Dining Court
6:15 PM  Depart to France Cordova Recreational Sports Center
6:30-8:00 PM  France Cordova Recreational Sports Center Tour
6:30-10:00 PM  Hillenbrand Conference Room C102A (private room for teachers)

Thursday, June 25

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 labs 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.*
8:00 AM  Depart

8:15-10:45 AM  Renewable Energy Challenge – Gerald D. and Edna E. Mann Hall (MANN), Mann Hall Atrium, 1st Floor
John Zakelj, Wind Senator and Science Teacher & High Ability Program Coordinator, Union City Jr/Sr. High School, Union City,

11:00 AM  Depart for Auto Manufacturing Tour
Subaru of Indiana Automotive, Inc., Lafayette, Indiana
5500 IN-38, Lafayette, IN 47905

11:45 AM  Lunch - Training Center Auditorium

12:30-2:15 PM  Tour
Brent Lank, Sr. Project Specialist, Management Systems Government Relations
Subaru of Indiana Automotive, Inc.
5500 IN-38, Lafayette, Indiana 47905

2:30-3:30 PM  Addressing the Challenge of Rising Energy Costs Through an Effective Energy Management System
Tom Easterday, Executive Vice President, Subaru of Indiana Automotive, Inc., Lafayette, Indiana

3:45 PM  Depart

5:00 PM  Dinner – Hillenbrand Dining Court

6:30 –10:00 PM  Background work on projects
Computer Labs – BRNG B274, B275, B282, B286
Hillenbrand Conference Room C102A (private room for teachers)

7:00 PM  Teachers should finalize their topics and present a rough draft of their lesson plans to the mentor teachers (Hillenbrand Room C102A).

Friday, June 26

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 labs coat for any hands-on activities and/or research projects.
Additional Notes: (1) all adults must have their driver’s licenses with them to tour Purdue’s Nuclear Reactor, and (2) participants will be divided into three sub groups of approximately 30 each.

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

8:00 AM Depart

8:15-9:00 AM Nuclear Power Production – EE 170
Derek Ebeling-Koning, Fellow Engineer, New Plants Engineering, Westinghouse Electric Company, Cranberry Township, Pennsylvania

9:00 AM Depart by bus for the nuclear reactor tour and discussion
Electrical Engineering/Northwestern Avenue

Topic #1: Tour of Nuclear Reactor and Learn about Detectors
Robert Bean, Professor, Nuclear Engineering

Topic #2: Experience working at a nuclear power manufacturing company
Derek Ebeling-Koning, Fellow Engineer, New Plants Engineering, Westinghouse Electric Company, Pittsburgh, Pennsylvania

Topic #3: Exploring STEM careers in the Nuclear Industry
Amit Varma, Professor and University Faculty Scholar
School of Civil Engineering, Purdue

Group 1 = Yellow/Kyle + Blue/Aalok
Group 2 = Red/Justin + Green/Helena
Group 3 = Purple/Jenny

<table>
<thead>
<tr>
<th>Time</th>
<th>Group 1 (Yellow/Blue)</th>
<th>Group 2 (Red/Green)</th>
<th>Group 3 (Purple)</th>
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<tbody>
<tr>
<td>9:15-10:00 am</td>
<td>Topic 1: Nuclear Reactor Bean/EE Basement</td>
<td>Topic 2: Nuclear Company Ebeling-Koning/EE 005</td>
<td>Topic 3: Nuclear Careers Varma/EE 115</td>
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<td>10:00-10:10 am</td>
<td>Transition</td>
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<tr>
<td>10:10-10:55 am</td>
<td>Topic 3: Nuclear Careers Varma/EE 115</td>
<td>Topic 1: Nuclear Reactor Bean/EE Basement</td>
<td>Topic 2: Nuclear Company Ebeling-Koning/EE 005</td>
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<td>10:55-11:05 am</td>
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<td>11:05-11:50 am</td>
<td>Topic 2: Nuclear Company Ebeling-Koning/EE 005</td>
<td>Topic 3: Nuclear Careers Varma/EE 115</td>
<td>Topic 1: Nuclear Reactor Bean/EE Basement</td>
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11:50 AM Depart for MRGN

Noon Lunch – MRGN Café
Lunch with Bowen Engineering Corporation staffs

1:00-1:50 PM MRGN-121
Inspiration and Careers in Engineering & Technology
Bob Bowen, Founder and Chairman of the Board
Bowen Engineering Corporation, Indianapolis
2:00-2:45 PM  Building the New Bioeconomy
Maureen McCann, Professor of Biological Sciences; Director, Energy Center and Department of Energy – Center for Direct Catalytic Conversion of Biomass to Biofuel

Students
2:45 PM  Students depart for computer Labs
3:00-4:45 PM  Students to work on projects and fill out post-assessment survey
Computer Labs BRNG B274, B275, B282, B286
4:45 PM  Depart for dinner
5:00 PM  Dinner – Hillenbrand Dining Court

Teachers
3:00-4:30 PM  Teachers share their lesson plans (3 minutes each) – MRGN 121
4:45 PM  Depart for dinner
5:00 PM  Dinner – Hillenbrand Dining Court
6:30-9:30 PM  Students: to work on final presentations/projects
Teachers: to fill out post-assessment survey
Computer Labs – BRNG B274, B275, B282, B286
Hillenbrand Conference Room C102A (private room for teachers)
8:30-10:00 PM  Bowling (optional)

Saturday, June 27

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 Feature Gym, France Cordova Rec Sports Center
8:25 AM  Welcome and introductory remarks
Maureen McCann, Professor of Biological Sciences; Director, Energy Center and Department of Energy – Center for Direct Catalytic Conversion of Biomass to Biofuel
8:30-8:35 AM  Daniel Hirleman
Chief Corporate and Global Partnerships Officer
8:35-8:50 AM  Doug Esamann  
*Executive Vice President and President Duke Energy Midwest & Florida Regions*

8:50-10:30 AM  Project Presentations (10 minutes each)  
1. *Dark Yellow/Photovoltaic Solar Cells*  
2. *Light Yellow/Batteries*  
3. *Blue/Fuel Cells and TEM*  
4. *Dark Red/Combustion and Lasers*  
5. *Light Red/Energy Challenge*  
6. *Green/Biofuel*  
7. *Purple/Solar Home*  

10:30-10:45 AM  Break

10:45-11:00 AM  Reflections by teachers and/or teacher lesson (TBD)

11:00-11:10 AM  Remarks by Suresh Garimella  
*Executive Vice President for Research and Partnerships*  
*Goodson Distinguished Professor of Mechanical Engineering*  
*Director, NSF Cooling Technologies Research Center, Purdue*

11:10-11:20 AM  Remarks by Sheila Klinker  
*State Representative, State of Indiana House of Representatives, District 27*

11:15-noon  Certificate presentation

12:00 PM  Closing remarks by *Pankaj Sharma*

1:00 PM  Good bye

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- Horizon Educational  
- INSPIRE, Purdue  
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- Kidwind Project  
- Laboratory of Renewable Resource Engineering, Purdue  
- Mechanical Engineering, Purdue  
- National Energy Education Development  
- RPIWare, LLC  
- Siemens Energy Inc.  
- Subaru of Indiana Automotive  
- Tipmont REMC  
- Youth Development and Agricultural Education, College of Agriculture, Purdue