PROBLEM:

Most people know that our non-renewable energy resources are in short supply and will possibly be depleted in the next 50 – 100 years.

The more immediate problem is that the energy workforce is in crisis.

The average age for energy employees is over 50 and will be retiring in the next 5 – 10 years leaving over 500,000 unfilled jobs.

We will need even more skilled workers than that due to technological advances and demand.
WHY THE LACK OF INTERESTED, FUTURE EMPLOYEES?

Public perception, especially with younger generations view the energy industry as not as lucrative and lower skilled than other careers. This means that qualified workers are not taking the opportunities that the energy field possesses. It is imperative that we educate and encourage the next generation to get involved with the energy industry.
GridEd/GEARED

A collaborative educational initiative seeking to develop and train the next generation of power engineers.

GEARED (Grid Engineering for Accelerated Renewable Energy Development)

Collaborative educational initiative consisting of the Electric Power Research Institute (EPRI), utility and industry sponsors and 4 universities (Georgia Tech, University of North Carolina Charlotte, Clarkson University, and University of Puerto Rico.
POWER/UTILITY ENGINEERING COURSE FOR HIGH SCHOOL

7 unit outline created last year

Unit 1: Introduction to Energy Lesson Plans and Activities created this summer.

It will be uploaded to the following websites within the next month

http://grided.epri.com/
http://stemgeorgia.org/
https://www.ceismc.gatech.edu/
http://gtri.gatech.edu/stem
LESSON 1: A HISTORY OF POWER SYSTEMS

PowerPoint: Notable Inventors and Innovations
Links to Videos: Benjamin Franklin Biography, War of the Currents
Activities: Making your own Voltaic Pile, Making a Simple Electric Motor
LESSON 2: ENERGY

PowerPoint: Types and Forms of Energy; Law of Conservation of Energy
Virtual Lab on Potential Energy
Worksheets (different levels determined by math level)
Determine Energy for a Rolling Ball Lab
Heat Energy Lab
Heat and Temperature Flash Chart (with Rubric)
LESSON 3: WORK

• PowerPoint: What is Work? Work-Kinetic Energy Theorem
• Worksheets (different levels determined by math level)
• Graphing PowerPoint, video and activity
• Lesson 3 may be done before Lesson 2

Is she doing work?
LESSON 4: MECHANICAL POWER AND POWER GENERATION

PowerPoints: Mechanical Power and Electrical Power Generation (other PPTs about current, resistance and circuits)

Work and Power Lab

Worksheets (different levels determined by math level)

Activities: Make a simple electric generator, Making Hydropower, Making a Pinwheel Wind Turbine, Making a Solar Oven

Lab Practicum

Electromagnetism Project
LAB PRACTICUM

- PART A: Creating an Electrochemical Cell (Film Canister and Lemon)
- PART B: Changing Chemical Energy into Electrical Energy
- PART C: Resistors in Series and Parallel Circuits
- PART D: Electrical Energy and Capacitance
LESSON 5: THE UTILITY INDUSTRY TODAY

PowerPoints: The Utility Industry, Careers in the Utility Industry
Projects: The Industrial Revolution, Utilities Career (with Rubrics)
WHY THE UTILITIES INDUSTRY?

With Baby-boomer retirements there are lots of opportunities for qualified applicants.
Diverse companies and products – many avenues to pursue.
Earnings for production workers are much higher than in most other industries.
ACKNOWLEDGEMENTS

- Dr. Leyla Conrad and the STEP-UP Program
- Kevin Caravati
- GTRI
- GridEd/GEARED