Energetic About the Environment?: Careers in Clean Energy

Scott Williams
Research and Education Coordinator, Wisconsin Energy Institute
University of Wisconsin-Madison
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Forward in Energy

- Foster success of collaborative energy research projects
- Prepare energy leaders of today & tomorrow
- Provide energy solutions to the public, communities & industry
- Enhance public understanding of pressing energy issues

energy.wisc.edu
Outline

- Defining Clean Energy
- Clean Energy Sectors and Job Examples
- Resources and Advice
How do you Define Clean Energy?

- Low-Pollution Energy Sources
  - Renewables: Wind, Solar, Geothermal, Bioenergy, Hydro
  - Nuclear? Clean coal/gas?
  - Enabling tech (e.g. batteries)

- Energy Efficiency and Conservation
  - Reducing our energy usage in homes, businesses, factories, and transportation
Why Clean Energy?

- Do well by doing good
  - Climate change, pollution, sustainability

- Fast-growing sector:
  - Ex: One out of every 83 new jobs created in the U.S. over the past 12 months was created by the solar industry.
  - The solar industry is adding workers at a rate nearly 12 times faster than the overall economy.
  - But solar still counts for roughly 1% of energy in U.S.
Four “Quadrants” of Clean Energy Leaders

- **Politicos**
  Students drawn to careers as politicians, policy advocates, lawyers, lobbyists, judges, activists- people who craft and advocate for a transformative clean energy public agenda.

- **Innovators**
  Students drawn to careers as engineers, scientists, inventors, entrepreneurs- people who discover and demonstrate the power of clean energy solutions.

- **Technicians**
  Students drawn to careers as builders, carpenters, mechanics, electricians, farmers, accountants- people who build and maintain the infrastructure of clean energy solutions.

- **Storytellers**
  Students drawn to careers as journalists, marketers, artists, musicians, filmmakers, teachers- people who capture, share and promote our new energy story.

Source: http://focusthenation.org/
Employer Types in Clean Energy

• **Electric Utilities**
  – Alliant Energy, Madison Gas and Electric

• **Construction/Installation Firms**
  – Mortenson, Findorff, Boldt, Sun Peak

• **Manufacturers**
  – Johnson Controls, GE, Sunpower, Tesla

• **Chemical/Biochemical Companies**
  – Novozymes, Dupont, IOP

• **Energy Services Providers**
  – Wisconsin Energy Conservation Corp., Franklin Energy, CB&I

• **Economic, Environmental or Engineering Consulting Firms**
  – Navigant, DNV GL, GDS Associates, Affiliated Engineers

• **Government Agencies**
  – WI Public Service Commission, FERC, Dept. of Energy

• **Non-Profits/Advocacy**
  – Sierra Club, Environmental Defense Fund, RENEW Wisconsin

• **R&D Firms**
  – NREL, Argonne Natl Lab, EPRI

• **Also plenty of startups (or start your own)!!**
Sectors in Clean Energy

• Sustainable Transportation
• Energy Saving Homes, Businesses and Manufacturing
• Low-Carbon Electricity
• Policy and Law
• Jobs that Transcend Sectors
Sustainable Transportation

• Bioenergy (renewable fuels)
  – Biosciences
  – Engineering

• Vehicles (EVs, efficient engines)
  – Automotive Engineering
    (Electrical Engineering or Mechanical Engineering)

• Mass Transit (trains, buses, etc.)
  – Urban Planning, Transportation Management
Energy Saving Homes, Businesses and Manufacturing

• Energy Efficiency and Demand Response Programs
  – Communications and Marketing
  – Data Analysis
• Advanced Manufacturing
  – Mechanical or Industrial Engineering
• Green Building
  – Civil Engineering, Real Estate
Low-Carbon Electricity

• Engineering
  – Designing and analyzing systems

• Construction
  – Planning and building systems
  – Environmental impact analysis

• Manufacturing
  – Materials, components, processes

• Financing and Markets
  – Green banks
Policy and Law

• Policy Analyst
• Environmental Lawyer
• Environmental Advocate/Lobbyist
Jobs that transcend sectors

• Accountant/Economist/Financial Specialist
• Sales, Marketing and Communications
• IT
• Project Management/Development
Beyond the technical skills - what are good cross-cutting competencies?

• Good communication skills
• Ability to work with others across disciplines
• Systems thinking - being able to see how different parts affect one another in a system
• Numeracy – ability to put numbers into context
• Knowledge of industry – keep up with current events
Resources and Advice

• Get Informed:
  – Take courses in energy (Intro: Physics 115)
  – Explore degree and certificate programs
  – Read the news

• Get Involved:
  – Student clubs (e.g. Energy Hub – win.wisc.edu)
  – Internships
  – Research Experience
  – Competitions
Educational Programs at UW

• Certificate in Engineering for Energy Sustainability
  – Undergraduate certificate
• Energy Analysis and Policy Certificate
  – Graduate certificate
• Resource and Energy Demand Analysis
  – Accelerated Master’s degree
• Other programs with energy concentrations
  – Environmental Studies Major or Certificate
  – Sustainability Certificate
energy.wisc.edu >> Education >> UW-Madison Academic Programs
For Students

- Academic Programs
- Research
- Careers
- Competitions
Competitions

- Win up to $10k for your idea
- energy.wisc.edu/wesc
- (Deadline is October 28, repeats annually)

- Compete against other colleges to design and deploy working turbine
- Team is filled for 2017, but plan to compete again in 2018

- “Race to Zero” Design Competition (Interior Design, Architecture, Engineering)

- ASHRAE student design competition (commercial buildings)
“Resources for Students” webpage

• [http://energy.wisc.edu/resources/for-students](http://energy.wisc.edu/resources/for-students)

• Links to other career resources, including:
  – DOE Clean Energy Jobs and Career Planning
  – My Energy Gateway
  – CareerOneStop Competency Models
  – Job boards
On getting a job

• Still an emerging industry
• Do a national search (especially for internships)
• First job may not be in clean energy, but ability to transfer (keep networking and researching)
• Do your research – find out about employers, network with alumni
  – Don’t ask them for a job, but ask them easier questions (how they got their job, skills needed)
• LinkedIn Search Activity
LinkedIn Search Activity

• Go to LinkedIn (create a profile if you haven’t already)
• Search for University of Wisconsin-Madison
• Click on “Explore Careers of 205,000 alumni”
• Enter keywords (e.g. energy)
• Filter by major, company, location, etc.
Badger Bridge

• New website connecting UW alumni and students
• Profile connects with LinkedIn
• Alumni list what you can contact them about
• BadgerBridge.com
Questions?

- Scott Williams
- spwilliams@wisc.edu
- www.energy.wisc.edu