



Wisconsin Energy Institute
UNIVERSITY OF WISCONSIN-MADISON

Energetic About the Environment?: Careers in Clean Energy

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10/19/2016

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

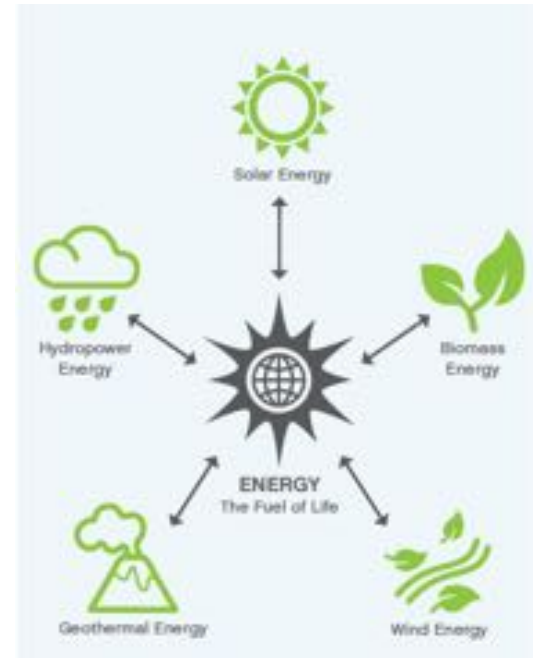


Outline

- Defining Clean Energy
- Clean Energy Sectors and Job Examples
- Resources and Advice

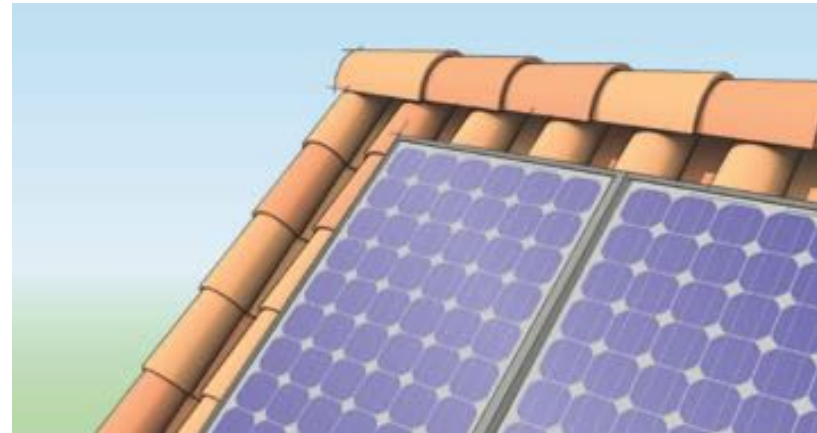
How do you Define Clean Energy?

- 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

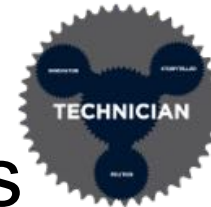
• Politicos

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



• Technicians

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



• Innovators

Students drawn to careers as engineers, scientists, inventors, entrepreneurs- people who discover and demonstrate the power 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.



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

The screenshot shows the website for the University of Wisconsin-Madison Energy Institute. The header includes the university name and logo, a search bar, and navigation links for UW-Madison, Contact, and WEI Intranet. The main navigation menu includes Home, About, News, Research, Education, Events, Resources, and Support Us. The Education menu is expanded, showing options like Certificate in Energy Sustainability, Educational Materials, Education Programs, Event Blog, UW-Madison Academic Programs, and External Resources. The UW-Madison Academic Programs page is displayed, featuring a sidebar with the same menu items and a main content area with the heading 'UW-MADISON ACADEMIC PROGRAMS'. The text describes formal programs offered to both undergraduate and graduate students, including the Certificate in Engineering for Energy Sustainability (CEES).

UNIVERSITY OF WISCONSIN-MADISON

UW-Madison | Contact | WEI Intranet

Wisconsin Energy Institute

Search this site GO

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Home » Education » UW-Madison Academic Programs

Education

- Certificate for Energy Sustainability
- Educational Materials
- Education Programs
- Event Blog
- UW-Madison Academic Programs**
- External Resources

UW-MADISON ACADEMIC PROGRAMS

Students at the University of Wisconsin-Madison have a number of formal programs to choose from, including certificates, degrees, distance degrees and degree focus areas offered to both undergraduate and graduate students.

UW-MADISON ACADEMIC PROGRAMS

Certificate in Engineering for Energy Sustainability

The Certificate in Engineering for Energy Sustainability (CEES) offers undergraduate students a suite of courses addressing energy sustainability that span across the engineering curriculum, with firm roots in "real world" design and engineering practices.

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Website: <http://www.energy.wisc.edu/education/energy-certificate>

Certificate in Engineering Thermal Energy Systems

energy.wisc.edu >> Resources >> For Students

The screenshot shows the Wisconsin Energy Institute website. The header includes the logo and navigation tabs: HOME, ABOUT, NEWS, RESEARCH, EDUCATION, EVENTS, RESOURCES, and SUPPORT US. The 'RESOURCES' tab is active, and a dropdown menu is open, listing: FOR UW-MADISON RESEARCHERS, FOR STUDENTS (highlighted), FOR PROFESSIONALS, and FUNDING OPPORTUNITIES. The main content area is titled 'FOR STUDENTS' and features several sections: 'Undergraduate Research Resources' with a brief description and a link to 'See our resources and tips on the Undergraduate Research Resources & Opportunities page'; 'Wisconsin Energy and Sustainability Challenge' with details about a competition held at the Ever Event Center on November 13, 2015; and 'Careers in Energy' with a 'Submit a New Job Posting' button. On the left sidebar, there are links for 'Connect with Us' (Twitter, YouTube, Facebook, RSS) and 'Funding Opportunities'.

- 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>
- 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?

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