



Wisconsin Energy Institute
UNIVERSITY OF WISCONSIN-MADISON

Energetic About the Environment?: Careers in Clean Energy

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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

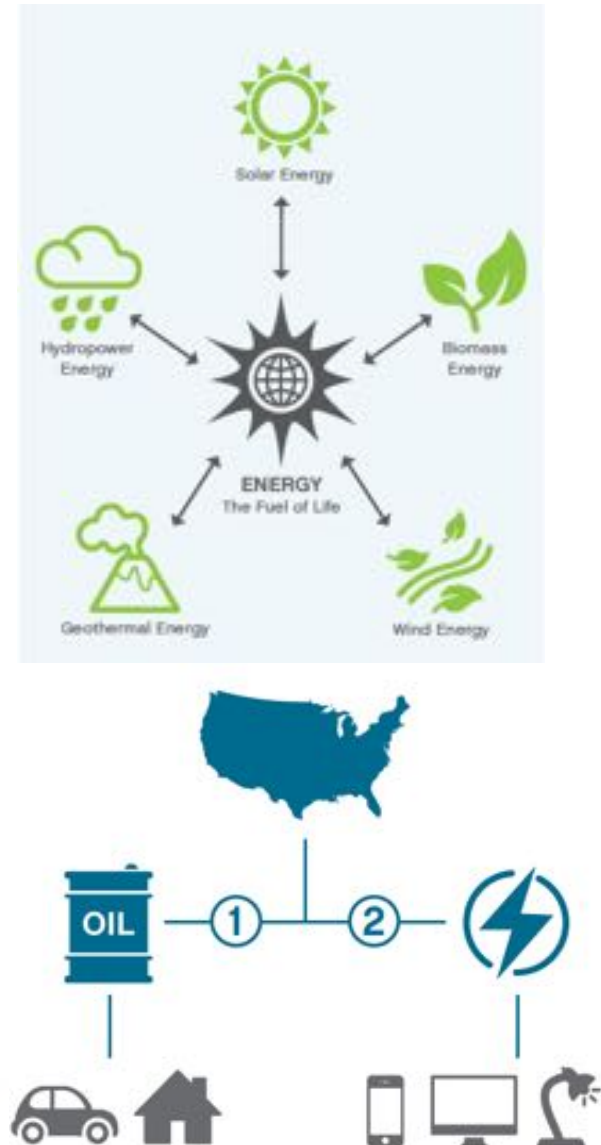


Outline

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

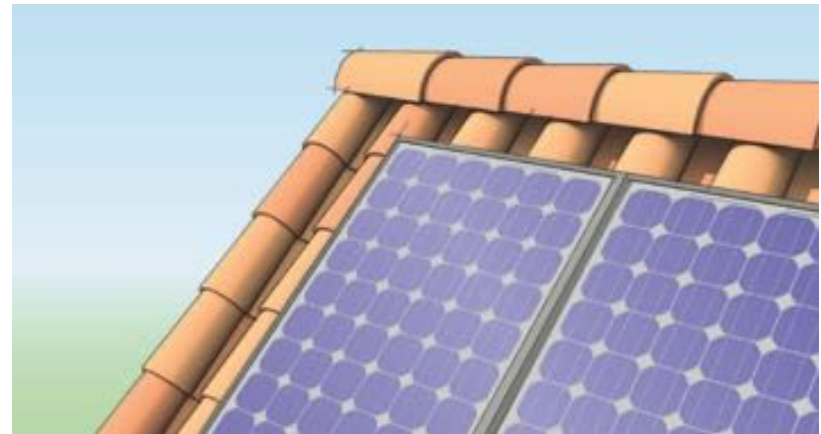
How do you Define Clean Energy?

- 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.



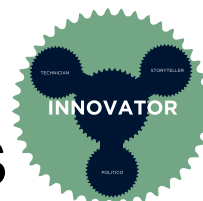
• Technicians

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

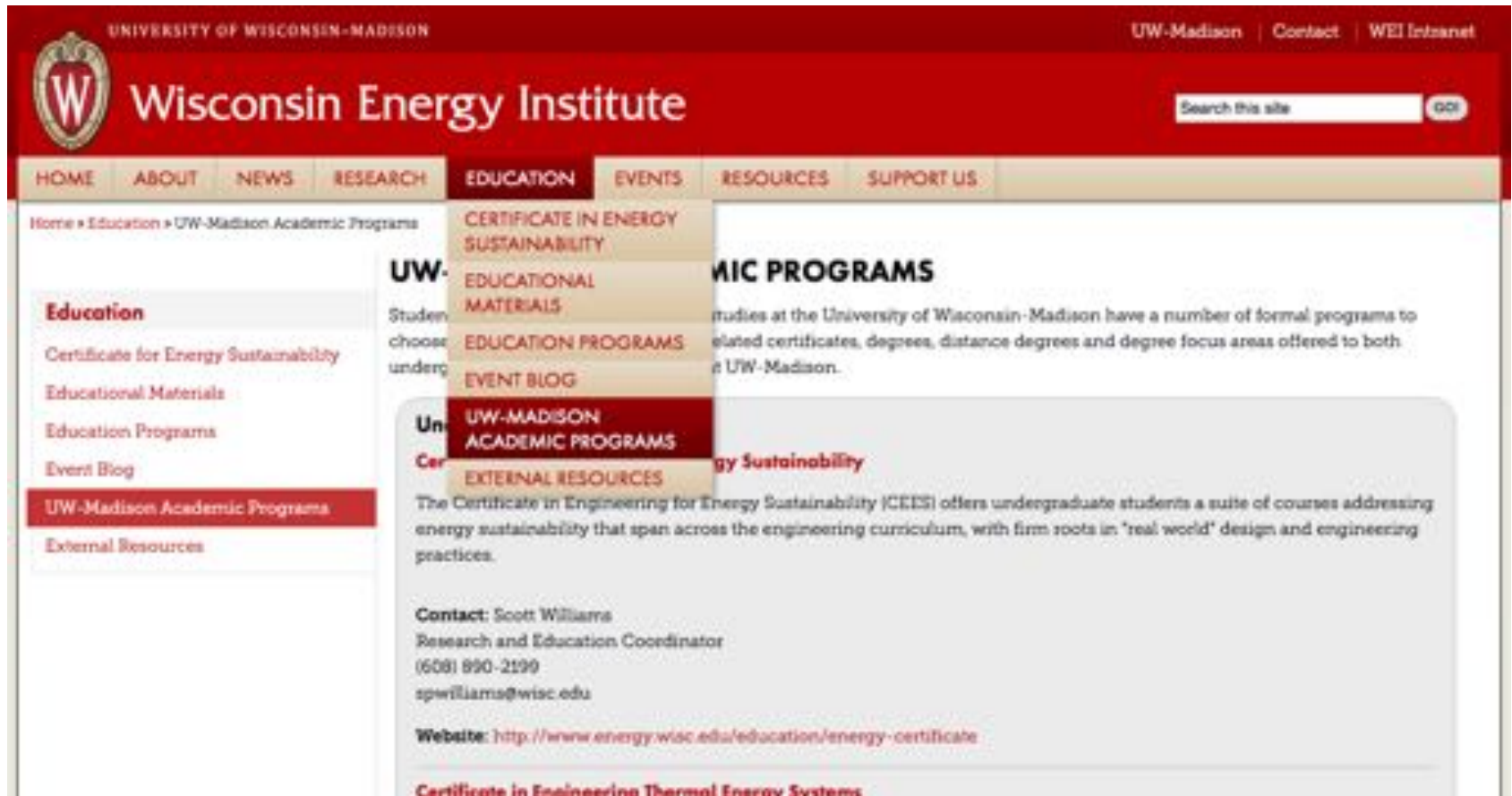
Resources and Advice

- 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 Wisconsin Energy Institute website. The header includes the University of Wisconsin-Madison logo and name, and the Wisconsin Energy Institute logo. A navigation bar contains links: HOME, ABOUT, NEWS, RESEARCH, EDUCATION (highlighted), EVENTS, RESOURCES, and SUPPORT US. A search bar is located in the top right. The main content area is titled "UW-MADISON ACADEMIC PROGRAMS" and lists various educational offerings. A sidebar on the left provides a quick navigation menu.

UNIVERSITY OF WISCONSIN-MADISON

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Wisconsin Energy Institute

Search this site GO

HOME ABOUT NEWS RESEARCH **EDUCATION** EVENTS RESOURCES SUPPORT US

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

EXTERNAL RESOURCES

UW-MADISON ACADEMIC PROGRAMS

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.

Contact: Scott Williams
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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 is red with the institute's logo and name. A navigation bar contains links: HOME, ABOUT, NEWS, RESEARCH, EDUCATION, EVENTS, RESOURCES, and SUPPORT US. The 'RESOURCES' link is highlighted, and a dropdown menu is open, showing options: 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 paragraph about research opportunities, 'Funding Opportunities' with a paragraph about compiling a list of federal and non-federal funding, 'Wisconsin Energy and Sustainability Challenge' with a paragraph about supporting scientific discovery, and 'Careers in Energy' with a 'Submit a New Job Posting' button. On the left sidebar, there are links to '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?

- Scott Williams
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- www.energy.wisc.edu