LETTER FROM THE DIRECTOR:

Welcome to all the new WWU students and families, and welcome back to returning students, faculty, staff and friends. The Institute for Energy Studies continues to build our unique, interdisciplinary program that is designed to help students contribute to the global clean energy transition, which was identified by the United Nations as a “transformational global challenge” for our generation. Closer to home, we aim to prepare graduates to meet the future workforce needs of Washington’s emerging clean energy economy.

We now offer a BA degree in Energy Policy & Management, energy concentrations in Electrical Engineering and Business & Sustainability, and minors in Energy Science and Energy Policy. We are working to establish a dedicated BS degree in energy science and technology in the near future and, as our faculty and advisors work on the new program design and course offerings, students have the option to pursue a self-designed BS degree in energy through Huxley College.

The Institute for Energy Studies now offers about 32 courses over the course of the academic year, which now reach a significant share of WWU students. During the 2017-18 academic year 557 students logged 891 registrations in energy courses, and altogether in the past three academic years, some 1200 individual students registered for energy courses.

Our strategy of “campus and community as a laboratory” is also being realized. A student team has developed a project in collaboration with WWU Facilities Management and experts at Trane Climate Solutions, to study, audit, analyze and recommend cost-effective building energy efficiency measures for the WWU Fine Arts building. Another student team secured funding to establish an Energy Efficiency Tool Lending Library that will be housed in the SMATE building starting in Fall 2018. Yet another student has been working with the WWU Facilities Management team on a computerized dashboard to monitor campus building energy used and provide a road map for their on-going efforts to upgrade energy efficiency in campus buildings.

We held our third WWU Energy Symposium on April 24th, the WWU Carbon Hackathon. The new format was a student-focused Hackathon, with attendance of about 100, in which teams of students worked with expert advisors from across the region to brainstorm, develop and present a $10 million climate solution in one of five sectors, to be judged by a panel of experts from our industry advisory board. Another educational and fun event is in the works for next spring.

For new incoming students, we offer a number of possibilities. The popular ENRG 101 Energy and Society course is offered in both the fall and winter quarters. For freshmen, we offer a Freshman Interest Group (FIG) course series on the “Clean Energy Transition: Economics & Technology,” which combined ENRG 101 with ECON 206 Introduction to Microeconomics and a seminar course that introduces students to our program and to WWU. For students who have taken ECON 206, in the winter quarter we offer ENRG 284 The Business of Energy, which explores the interactions between energy technology, energy policy and the energy industries.

We also host a number of other co-curricular activities, including student internships and a Women in Energy Mentoring Network, which convenes local women professionals in the field to help mentor and advise students in the program.

Joel Swisher, Director
Institute for Energy Studies
Dr. Joel Swisher, Director of the Institute for Energy Studies:

Dr. Joel Swisher, Director of the Institute for Energy Studies at WWU, describes himself as a “mutt”… in a good way. As he works with the Institute for Energy Studies faculty and staff to build a unique, interdisciplinary program in energy, he stresses the need for all of the program’s graduates to have a solid understanding of technical, economic and policy aspects of energy systems. He sees our graduates working with other, more specialized professionals in the field and being able to bridge their specialties, and to eventually be their boss. Mutts are okay.

Dr. Swisher has a PhD in Civil and Environmental Engineering from Stanford, and his PhD dissertation topic was carbon offsets, which led him to work on problems that range from the costs of reducing carbon emissions in a US electric utility to the potential for saving carbon in conservation and forestry projects in Central America.

During most of the 2000- decade, Dr. Swisher was at Rocky Mountain Institute, where he was managing director of research and consulting for the well-known clean energy think tank. At RMI, Dr. Swisher led consulting engagements on energy efficiency and sustainable business for companies that produce everything from semiconductor chips to potato chips. This work often entailed convening intensive, interdisciplinary “design charrettes,” where leading technical practitioners and business managers brainstorm and conceptualize breakthrough solutions related to the client company’s energy and resource usage and costs.

While teaching in Stanford's School of Engineering before moving to WWU in 2014, Dr. Swisher introduced several new, interdisciplinary courses, such as Carbon Neutral Design, Electric Utility Resource Planning, and Greenhouse Gas Mitigation. He offered each class the option of substituting any course assignment with an original song! So far, only one student has taken this challenge, but it remains open for WWU students as well. Meanwhile, Dr. Swisher harbors a secret catalogue of energy-themed songs, including “Supertanker Blues” and other hits.

If you run into Dr. Swisher in the weight room at the Recreation Center, he might be training for an upcoming competition in orienteering, a Scandinavian sport that involves cross country running while finding the course using map-and-compass navigation in the woods. Dr. Swisher lived in Scandinavia for several years in the 1990s and later used his orienteering experience there to win two US championships and three seconds in his age group. So, it is probably okay to ask him directions.
PROJECT ZeNETH’s NET ZERO TINY HOUSE
Tiny House, Big Love - A WWU Interdisciplinary Collaboration

When one thinks of tiny homes, what comes to mind? Simplicity? Sustainability? A fad? As the student-led team at the Institute is learning, the topic of tiny homes can intersect with most any academic discipline at Western.

Currently at eighteen students and growing, Project ZeNETH (Zero Net Energy Tiny House) has expanded its focus to include sustainable building design, project management, construction management, energy systems design and modeling, strategic outreach and partnership engagement, student involvement, urban planning and policy, grant writing, media coordinating, and the historical and contemporary psychological, political, and sociological implications of living in tiny homes. Whew. There’s a lot going on!

Our team recently secured grant funding through Western’s Sustainable Action Fund - a self-imposed student tax for the purpose of promoting “sustainability” projects at the University. Because this grant is student funded, we know that we have a deeper responsibility to our fellow students at Western for creating a project that truly represents the student body of this campus. We understand that in order for our work to be successful, for the house to be built, and for students to actually use their university-level education, students need to be able to see themselves within our vision and feel inspired to be involved with ZeNETH. This is a guiding principle for us, and we understand that education must go hand in hand with action.

While there is much growth to come, it must be noted that our teams are already making the vision of ZeNETH into a reality. For example, our Design team has been incredibly productive these past few months in turning our basic tiny house idea into a stunning example of what it means to address sustainable design with style. Our home design is not only net zero energy, but also incorporates a clear sense of place that grounds our work in the culture of the Pacific Northwest.

Looking forward, we recognize there are still more approvals to gather, budgets to refine, and actually a house to be built. However, in months since we launched Project ZeNETH, this growing collection of self-driven students have demonstrated that this is, indeed, meaningful work. Western, the Institute for Energy Studies, and the students of this University all stand to benefit from putting our education into practice.

Currently, we are looking for:
- Anthropology & Sociology students to analyze tiny homes as an option for vulnerable populations
- Journalism students to regularly document and cover the project’s progress
- Engineering and industrial design students to review our home’s design
- Biology students to seek out biomimetic design opportunities
- Construction ready / interested students for the build team
- Inspired people who want to engage!

Want to get involved with Project ZeNETH?
EMAIL: projectzeneth@gmail.com
WEB: https://wp.wwu.edu/projectzeneth/

Above: Tiny house team members.
Left: Net Zero Tiny House Rendering by Project ZeNETH’s Design Team

Above: Tiny house team members. Left: Net Zero Tiny House Rendering by Project ZeNETH’s Design Team
2018 SnoPUD Professorship Awarded to Professor Xichen Jiang

In Institute for Energy Studies Uses the “Campus as a Lab”

I am extremely grateful to the Snohomish Public Utility and my colleagues at Institute for Energy Studies for being awarded this professorship. It is a great honor to be named this professorship because I work at a great university that is full of excellent faculty and colleagues. The IES has a truly amazing group of people. I am humbled by this opportunity and to receive this distinction.

PUD PROFESSORSHIP UPDATE:
2018 SnoPUD Professorship Awarded to Professor Xichen Jiang

Xichen Jiang, an assistant professor at Western Washington University in the College of Engineering and Design, has been awarded the Snohomish Public Utility (SnoPUD) Professorship for the 2018-2019 academic year. He is with the electrical engineering program, conducting research in the reliable integration of renewable energy resources. Jiang received his Ph.D. from the University of Illinois in 2016 and joined WWU soon after graduation.

The funding from this professorship will support three undergraduate students to assist in his research in improving the reliability of power systems. The projects include developing techniques to detect and locate faults that occur on distribution systems and the optimal sensor allocation for such schemes. Another research involves the economic benefits of conservation voltage reduction through automatic voltage regulators for local utilities in the Pacific Northwest. Finally, the costs of outages and consumer damage functions specific to this area will be developed. The students will work together with local utilities and conduct outreach with local high schools. The results of these research will be submitted to conferences where the students will have an opportunity to present their work.

“"I am extremely grateful to the Snohomish Public Utility and my colleagues at Institute for Energy Studies for being awarded this professorship. It is a great honor to be named this professorship because I work at a great university that is full of excellent faculty and colleagues. The IES has a truly amazing group of people. I am humbled by this opportunity and to receive this distinction.

FINE ARTS BUILDING ENERGY AUDIT:
Institute for Energy Studies Uses the “Campus as a Lab”

As part of the IES “Campus as a Living Laboratory” initiative, a series of WWU student teams have been developing a project, in collaboration with WWU Facilities Management and external experts from Trane Climate Solutions, to study, audit, analyze and recommend cost-effective building energy efficiency measures and monitoring technology for the WWU Fine Arts building, a 1940s-vintage building in acute need of such upgrades. The first step was an initial audit and analysis of energy use in lighting and plug loads (electricity-using appliances, electronics, etc.) that was carried out as part of the ENRG 490 capstone course in Spring 2018, with support from WWU Energy Manager Scott Dorough, IES Director Joel Swisher, and Trane Climate Solutions engineer Michael James. The next steps will involve more detailed analysis of energy use and savings potential in the building envelope and heating systems.
STUDENT SPOTLIGHT:
Kellen Lynch is Helping Lead WWU’s Net Zero Tiny House Project

Since beginning my energy studies at Western, I have been met with such enthusiasm and readiness to make things happen. The growing community within the Institute for Energy Studies is clearly one that will have an impact on the energy landscape of our future.

Beyond the Institute, I have been actively involved in other energy related projects around the university. In fall of 2017, I teamed up with fellow energy student Stella Tsitsiragos and Professor Imran Sheikh to launch a zero net energy tiny house through Western. Our team’s work will come to include research into housing codes, sustainable home design practices, construction of our tiny house, and subsequent research of its use. This opportunity to act on this personal vision is just the project that I need to turn my in class education into practical knowledge. A similar drive led me to join a research team in 2016 that is working to site 50 kilowatts of solar power on campus through a community solar initiative.

I currently work at Western’s Office of Sustainability as the Campus Bicycle Educator where I help manage our electric bike program. This program is designed to research carbon-free travel around the campus and our city, and is important to me a bicycle commuter.

Student clubs have played a significant role in my time at Western and have led me into new campus communities. I am a part of the Students For The Salish Sea, as well as Students For Renewable Energy where I am a club officer. The student leadership present in these clubs is tangible and really is a driving force of Western’s progress towards sustainability.

Upon graduating, I plan on utilizing my education from Western locally in Washington and to work on energy projects where it matters to me most - right here at home.

Kellen Lynch, Student
Institute for Energy Studies & Fairhaven College

“Upon graduating, I plan on utilizing my education from Western locally in Washington and to work on energy projects where it matters to me most - right here at home.”

Kellen Lynch
Western art professor, Cara Jaye, led a drawing project that began in Western’s Steam plant and ended in the Art Department with a circuitous never-ending drawing. Students in her class were assigned a section of wall to create their drawing. Each section connected to the sections to the left and the right, so the work flowed continuously into one drawing.

This project took elements from the Exquisite Corpse – a surrealist invented game by which a collection of words or images are assembled. Each collaborator adds to a composition in sequence, either by following a rule or by being allowed to see only the end of what the previous person contributed. By working with the people around them, artists connected their drawings together, and created one large work that encircled the B-Gallery exhibition space in the Fine Arts building.

Students began this assignment in the Steam Plant located outside the Fine Arts Building. They sketched from the various machinery in the building in order to get ideas and usable drawings for the project. The Steam Plant creates heat energy for distribution to the entire campus.

The large boilers heat water that creates the steam. While in the building, students paid attention to the color-coding of the pipes and the intake/outtake valves. They brought sketchbooks and pads with basic drawing materials in order to record and sketch all the various elements inside the building.

These sketches were used to build and create the corpse drawings. After a two sketch-and-reference sessions in the Steam Plant, the artists took their sketches back to the drawing studio and began work. Below are some of the drawings that were created.
Energy Student: Philip Swisher
BS in Electrical Engineering with an Energy Concentration

Last spring Phil designed an energy policy proposal that would enable property owners who lease out their property to recoup savings from energy efficiency improvements to their buildings...

ENERGY CHANGEMAKER FELLOWSHIP:
A Partnership between the Institute for Energy Studies & the IDEA Institute:

Supported by WWU’s IDEA Institute, Changemaker Fellows are exemplary Western students dedicated to taking action to make change in the world. Each fellow works to understand, communicate and design solutions to address important societal needs they are passionate about. These Fellows are from different disciplines, impact areas and backgrounds, yet they come together to create a community of continued development and support. The IES has partnered with the IDEA Institute to sponsor the ongoing development of the fellows program and to support students committed to solving intractable problems in the energy sector.

Phil Swisher, the first Changemaker Fellow focused on energy, is a driven engineering student here at WWU who has used his passion for sustainable energy as motivation to “spark” new energy efficiency innovation in Bellingham. With the help and support he has received from the IDEA Changemaker Fellowship, he has been able to do significant work over the past 18 months. When Phil started the Fellowship in December 2016, he wanted to address a local energy problem that nobody else was working on.

He found that over 50% of housing in Bellingham was rented, while at the same time rental housing is on average considerably less energy efficient than owner-occupied housing, especially in older houses (which Bellingham has plenty of). Since he made this realization, Phil has dedicated his fellowship project to addressing the split incentive issue in rental property, which is the cause for rental units’ lack of energy efficiency.

Last spring Phil designed an energy policy proposal that would enable property owners who lease out their property to recoup savings from energy efficiency improvements to their buildings, something that currently is difficult to do when they are not the ones paying the energy bills.

Over the summer, Phil partnered with the Arcology Institute here in Bellingham to launch a 2030 District (learn more at http://www.2030districts.org/). After launching a prospective 2030 District and days away from reaching the emerging district stage (2nd of 3 stages in the launch process), Phil, with the help of Sustainable Connections (another local non-profit), realized that a 2030 District was a bad fit for Bellingham and scrapped the project before too many resources were involved.

During the fall, Phil was able to design a business model for a non-profit called the Bellingham Energy Efficiency Fund (BEEF) that would also address the split incentive issue in rental property. The BEEF takes the solar leasing model and applies it to energy efficiency upgrades in rental property, where the savings from energy efficiency upgrades get paid back to the fund.

INTERESTED IN LEARNING MORE ABOUT ENERGY?
Consider joining Women in Energy Mentoring Network and/or the Energy Union this Fall!

https://www.facebook.com/groups/wwuwomeninenergy/
U.S. Rep. Rick Larsen meets with faculty, staff and students from the Institute for Energy Studies and the College of Science and Engineering.

The Institute for Energy Studies at Western Washington University is a multi-college collaboration that offers interdisciplinary undergraduate degrees to address the science, technology, policy, business and economic aspects of energy systems.