



ENERGY AND CLIMATE POLICY

INDIVIDUALIZED UNDERGRADUATE AND
GRADUATE STUDENT EMPHASIS AREA

CENTER FOR ENERGY SCIENCE AND POLICY



INTRODUCTION

The Energy and Climate Policy Emphasis Area is a professionally focused and interdisciplinary program within the Schar School's Center for Energy Science and Policy (CESP). If you are interested in government and policy, public administration, political science, law, global commerce, or international relations and security, and you are also interested in climate change, environmental sustainability, and energy issues, then this is an exciting opportunity to gain an innovative educational experience that combines components of all these areas.

The courses offered are taught by senior-level practitioners in their fields with decades of experience and are designed to offer real-world, empirical lessons. Undergraduate and graduate students can select the courses described here as part of their own designed area of emphasis to fit their specific goals and should discuss this with their academic advisor.

WHY INDIVIDUALIZE YOUR OWN ENERGY AND CLIMATE POLICY EMPHASIS AREA?



Today, climate change affects every part of our lives, and in the future it will likely dominate international relations, economics, security, commerce, social and public policy, and human health—not to mention the health and safety of our environment and natural resources. An important pathway to address climate change is through our energy system.

Energy systems also influence virtually every human activity. In fact, every major public policy area is directly affected by its relationship with energy. From a national and international perspective, it touches upon security, economics, politics, infrastructure, and technology. Since energy resources are a global commodity, energy has a nexus with finance, trade, investment, and development. Further, energy requires engagement with international laws and agreements, technology development and transfer, and intellectual property. Finally, the hidden costs of energy impact climate change, natural disasters, technological threats, and threats to human security.

The Schar School's Center for Energy Science and Policy has developed a series of courses that address energy and climate change. Combined, these courses offer students a unique opportunity to learn and engage in an exciting and innovative academic program that will prepare students for professional careers in federal, state and local government, private sector, consulting firms and think tanks, non-profit organizations, and multi-national organizations.

ENERGY AND CLIMATE POLICY

WHAT KIND OF JOBS AND CAREERS ARE IN ENERGY AND CLIMATE POLICY?

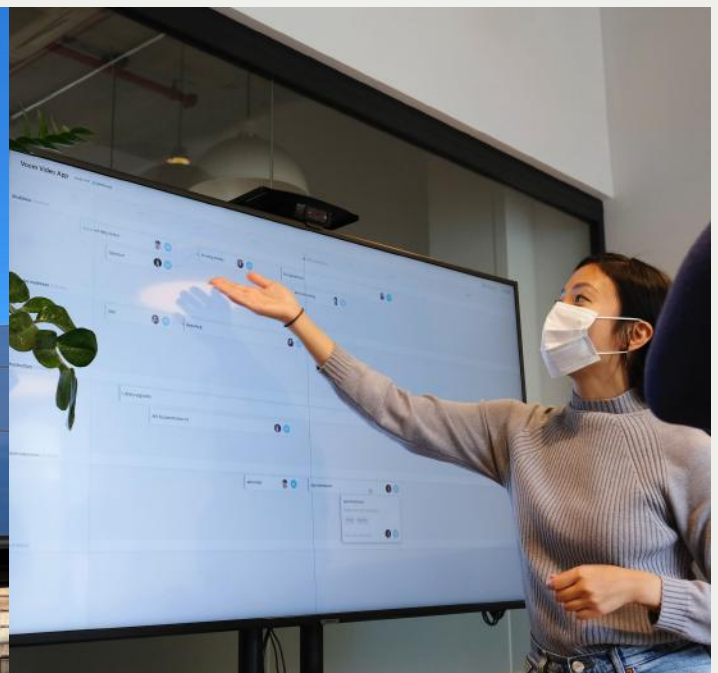
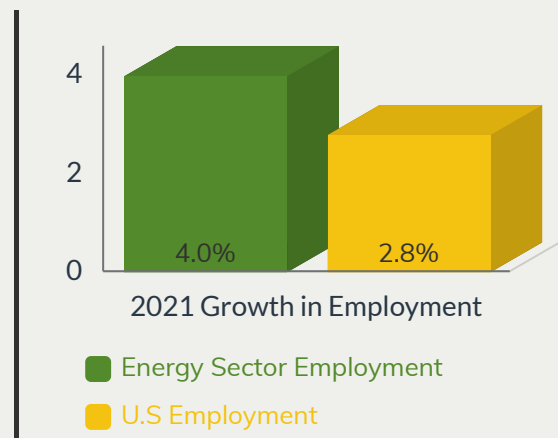


According to the 2022 U.S. Energy and Employment report, the energy sector employed 7.8 million people at the end of 2021. Employment in the energy sector grew 30% faster than overall U.S. employment in 2021, adding more than 300,000 new jobs. Additionally, jobs related to net-zero emissions made up approximately 40% of total energy jobs in the United States.

The type and number of potential jobs related to this emphasis area is vast, and include some of the following:

- Environmental project manager
- Environmental stewardship manager
- Energy Regulator
- Municipality sustainability director
- International relations specialist
- National security consultant
- Financial analyst
- Investment or trade policy analyst
- Corporate sustainability manager
- Environmental or energy engineer
- Energy industry analyst
- Environmental or energy policy consultant
- State and local planner
- Energy intelligence officer
- Environmental advocacy director
- International energy specialist
- Foreign Service Officer
- Environmental or energy attorney

Energy job growth outpaced the overall growth of the U.S. workforce by 30% in 2021.



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HOW WILL SCHAR'S ENERGY AND CLIMATE POLICY COURSES HELP ME?



These courses are designed to equip you with the necessary and practical skills that employers are seeking in prospective employees or to enhance in their current talent. We surveyed potential employers in energy and climate change policy and developed two core classes and two tracks, each with three additional courses. Your instructors have extensive practical experience working in these areas. The courses are designed for both graduate and undergraduate students to interact with prospective employers through research projects, internships, and prominent guest speakers. As a result, the curriculum is intended to place you in the most advantageous position to advance your career and secure the job of your choice.

To gain the most in-depth experience, the individualized emphasis area program recommends students take four courses (12 credits) in the following format: two core classes and two classes in either track 1 or track 2.

GRADUATE STUDENTS	UNDERGRADUATE STUDENTS
<p>Core Classes:</p> <ol style="list-style-type: none">1. U.S. Energy Policy POGO 550 Spring 2023, Fall 2023 Dr. Joel Hicks2. Introduction to Energy and Climate Law POGO 750 / EVPP 505 Spring 2023 Paul Bubbosh <p>Track 1</p> <p>Global Security, Geopolitics, & Sustainable Project Development (Choose 2):</p> <ul style="list-style-type: none">• Geopolitics of Energy Security POGO 750 Spring 2023 Richard Kauzlarich• Climate and National Security POGO 750 Spring 2023 Erin Sikorsky• Clean Energy Policies for Developing Countries POGO 550 Fall 2023 Dr. Michael Curtis <p>Track 2*</p> <p>Community Adaptation & Sustainability (Choose 2):</p> <ul style="list-style-type: none">• Greenhouse Gas (GHG) Inventory-Based Climate Action Planning POGO 550 Fall 2023 Dr. Joel Hicks• Energy Equity in Low-Income and Underserved Communities POGO 550 Spring 2023 Catyana Falsetti & Scott Sklar• Local Community Infrastructure Resiliency and Policy POGO 550 Summer 2023 Scott Sklar	<p>Core Classes:</p> <ol style="list-style-type: none">1. U.S. Energy Policy GOVT 464 Spring 2023, Fall 2023 Dr. Joel Hicks2. Principles of Energy and Climate Law EVPP 490 Summer 2023 Paul Bubbosh <p>Track 1</p> <p>Global Security, Geopolitics, & Sustainable Project Development (Choose 2):</p> <ul style="list-style-type: none">• <i>Course in Development</i> TBD• Climate and Security Challenges GOVT 444 TBD Richard Kauzlarich• Clean Energy Policies for Developing Countries GOVT 490 Fall 2023 Dr. Michael Curtis <p>Track 2*</p> <p>Community Adaptation & Sustainability (Choose 2):</p> <ul style="list-style-type: none">• Greenhouse Gas (GHG) Inventory-Based Climate Action Planning GOVT 490 Fall 2023 Dr. Joel Hicks• Energy Equity in Low-Income and Underserved Communities INTS 475 Spring 2023 Catyana Falsetti & Scott Sklar• Local Community Infrastructure Resiliency and Policy GOVT 490 Summer 2023 Scott Sklar



Capstone/Internship

Graduate and undergraduate students in **Track 2 - Community Adaptation & Sustainability** are eligible for a capstone or internship with a local government office working in energy and climate policy.

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COURSE DESCRIPTION: CORE COURSES



U.S. Energy Policy

Graduate | POGO 550 | Spring and Fall
Undergraduate | GOVT 464 | Spring and Fall



Introduction to Energy & Climate Law

Graduate | POGO 750/EVPP 505 | Spring

Principles of Energy & Climate Law

Undergraduate | EVPP 490 | Summer



There is no addressing the root causes of climate change without a global energy transition. There is no debate about this. But how might this transition take place in the U.S., the largest historic contributor to global anthropogenic greenhouse gases (GHGs)? Why do so many U.S. states have different and diverging energy policies? What is the current role of our federal legislative and executive branches in setting energy policy today? What should it be?

The federalization of energy policy has its roots in a long history of cartel action, environmental exploitation, divergent natural resource endowments, and, increasingly, politicization. So far, this has led to marginal reductions in U.S. carbon intensity since 2005 - not nearly sufficient to meet the Intergovernmental Panel on Climate Change's (IPCCs) recommendations for keeping global temperatures below 1.5°C above pre-industrial levels. As Led Zeppelin sang, "If it keeps on rainin,' levee's goin' to break." Join the discussion and we'll dissect where governance structures are in need of a tune-up and what role the public sector can most efficiently contribute to the energy transition.

Let's face the facts: energy and climate policy are stuck in legislative limbo. Congress is in paralysis, and it has been this way since the mid-1990s. On the other hand, the executive branch swings back and forth like a pendulum as partisan politics rocks us towards progress or backwards in retrenchment. In between paralysis and pendulum sits the judicial branch where Lady Justice wears a blindfold while holding the "scales of justice." In times of progress or retrenchment, the courts serve as the final bastion on policy. Today, we have a conservative controlled Supreme Court which has resulted in long-held legal traditions flipped on its head. By taking this course, you enter the realm of legal funky town where you try to figure out which way the courts will go. We'll analyze the legal challenges in the intersection between energy sources and air, water, natural resources, and human health.

This course is designed for non-law students, with a focus on students studying environmental science and policy. You will learn foundational legal concepts and explore each of the following major energy sources: coal, oil, natural gas, nuclear, hydropower, and renewables. You will also study topics in the electric power sector, transportation, climate change, and international energy. We'll debate law, policy, politics, economics, technology, and infrastructure. Of greatest interest to your education, we will adopt an actual client (e.g., environmental group) to assist with a research project, either individually or in teams.

COURSE DESCRIPTION: INTERNATIONAL TRACK



Geopolitics of Energy Security

Graduate | POGO 750 | Spring

Undergraduate | TBD | TBD



This course concerns the complex global setting where energy security, national security, and geopolitics intersect with climate change. Climate change is a critical issue for geopolitics. Still, policymakers' ability to focus on climate change is stretched by dealing with COVID-19-related health issues and near-term economic challenges related to stimulating economic and job growth while addressing the geopolitical crisis provoked by Putin's enduring invasion of Ukraine.

Nation-states have a geopolitical identity and geopolitical aspirations for influence. Energy security is an essential factor in those aspirations. Indeed, geopolitics is about nation-states -- individual states or groupings (formal or informal) of nation-states like the E.U. or OPEC. Nation-states can influence developments beyond their borders regarding access to, processing, and transportation of natural resources (carbon-based energy and

minerals essential for renewable energy development). Some call this geo-economics. Technology, directly and indirectly, impacts the production and consumption of energy and climate change. This is geo-technology. But nation-states are not the only actors. Others include sub-national and regional political entities, global energy companies, activist groups, terrorists, and organized criminal organizations.

Energy security concerns the security of supply, demand, infrastructure, environment, and the global climate. People everywhere want abundant, reliable (accessible on request), clean, and affordable energy from diverse sources. Energy security may have political, economic, commercial, and military aspects. Perceptions of energy security are more important than reality -- a reality changing more rapidly and unpredictably than ever in the past 100 years.

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COURSE DESCRIPTION: INTERNATIONAL TRACK



Climate Change & National Security

Graduate | POGO 750 | Spring

Climate & Security Challenges

Undergraduate | GOVT 444 | TBD



Clean Energy Policies for Developing Countries

Graduate | POGO 550 | Fall

Undergraduate | GOVT 490 | Fall



We are in the middle of a period – beginning with the Trump Administration in 2017 – that has upset global agendas relating to climate and national security. In 2017, the National Intelligence Council (NIC) analysis of 20-year global trends "...revolves around a core argument about how the changing nature of power is increasing stress both within countries and between countries, and bearing on vexing transnational issues." Two crucial but wicked transnational issues in this changing nature of power relate to the climate and national security.

The graduate-level Climate Change & Security course provides an in-depth examination of how the effects of climate change may shape national security, geopolitics, and global stability in years to come. Students will use cross-disciplinary industry projections, data, and tools to assess potential relationships between climate change effects and security outcomes.

The undergraduate-level Climate & Security Challenges course considers the interaction of global trends and evaluate the Biden Administration Executive Order on Climate Change and the Interim National Security Guidance. These reflect how the Biden Administration approaches the security threat global climate change poses and the conflicting energy and national security priorities associated with the transition to a low-no-carbon future.

While much of the industrialized world remains focused on the major greenhouse gas emitters, namely China, the U.S., India, and Russia, the developing countries also deserve equal attention for the part they play towards the goal of *net zero* greenhouse gas emissions by 2050. They now account for more than two-thirds of global CO2 emissions, while emissions in advanced economies are in decline. The countries account for two-thirds of the world's population, but only one-fifth of global investment in clean energy, and one-tenth of global financial wealth. The developing countries all have multiple energy priorities: energy access and poverty, development, energy security, etc. At the same time, they face a range of challenges in attracting investments in clean energy, including political will for change, institutional capacity, perceived risks for investors, *locked in* carbon emissions, need for policy and regulatory reforms, financing, and more.

The question then is: *How will developing countries achieve a transition to clean energy, reduce energy poverty, support economic development, ensure energy security, while, at the same time, and reduce carbon emissions towards a net zero goal by 2050?* Come join us and deepen your understanding of the core issues and solutions to this question. You are guaranteed to come away with the tools to provide sustainable solutions that can be used throughout the developing world; solutions are so desperately needed today.

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COURSE DESCRIPTION: STATE & LOCAL TRACK



Greenhouse Gas (GHG) Inventory-Based Climate Action Planning

Graduate | POGO 550 | Fall

Undergraduate | GOVT 490 | Fall



Yogi Berra once said, “If you don’t know where you are going, you might wind up someplace else.” This aphorism holds sway in a world that must rapidly decarbonize. Every level of government has a critical role to play in establishing smart, effective policies that efficiently transition our energy sector away from burning fossil fuels into the atmosphere. These actions will make us more secure as a nation and as a planet.

However, every nation, state, and municipality is unique across a long list of factors. What works best in one locale may be ineffective in another. Global standards for greenhouse gas (GHG) inventories allow governments at all levels to measure where they are and where they can most efficiently mitigate toward achieving their sustainability targets. This

class will introduce students to the most widely implemented GHG inventory tools. Next, we will use this information to develop climate mitigation strategies, via a climate action plan, that examine all levers of public and private enterprise to achieve desired outcomes most effectively. All the while, we’ll learn a lot about energy policy, local governance, and the power of planning.

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COURSE DESCRIPTION: STATE & LOCAL TRACK



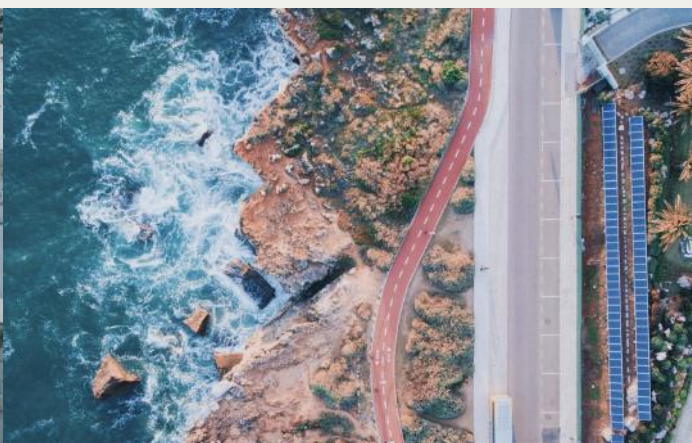
Energy Equity in Low-Income & Underserved Communities

Graduate | POGO 550 | Spring
Undergraduate | INTS 475 | Spring



Energy equity and environmental justice fundamental to facilitating a successful net-zero transition. But how exactly can practitioners use institutions and activism to – in the words of Dr. Martin Luther King, Jr. – bend the arc of the moral universe towards justice? This pioneering course connects students with practitioners to learn how governments and stakeholders can push for more equitable energy policy and action. Students will hear from prominent industry experts through guest lectures and gain direct hands-on experience working with a Northern Virginia jurisdiction to provide lower cost, more reliable, and healthier energy choice. Students will examine utility pay structures and new financial tools for localities that can drive a more equitable renewable energy transition. Additionally, students will understand how community solar models, efficiency buyer cooperatives, and power-purchase agreements intersect with these tools to empower underserved communities.

At the end of this course, students will not only gain an analytical understanding of energy inequities, but also sharpen transferable professional skills working with local communities to build a more equitable and sustainable society.



Local Community Infrastructure Resiliency & Policy

Graduate | POGO 550 | Summer
Undergraduate | GOVT 490 | Summer



It's no secret – infrastructure in the U.S. is in need of expansion and upgrades to connect clean energy into the grid, but for low-income and marginalized communities the infrastructure needs are more drastic. The United States has one of the oldest and most complex energy infrastructure systems in the world, with over 7,300 power plants and millions of miles of high- and low-voltage power lines. But to support local communities, especially those seeking to transition to cleaner and more resilient infrastructure, there are basic needs that must be met first, such as food, water, broadband, and transportation. Climate change and extreme weather events, pose the single greatest stress to these communities' critical and fundamental systems.

The question is: what can local governments, private companies, and innovators do to address the challenges in low-income and marginalized communities? What tools are required to make the transition in underserved communities more economic, healthier, and resilient? And with these changes, what other benefits are derived to strengthen quality of life, job creation, and local autonomy? This course is one of the first in the country to provide a detailed layout of critical infrastructure and its direct impact on low-income and under-served communities. Students will learn and focus on local community vulnerabilities and impacts on education, healthcare, economic development, and quality of life for marginalized communities, and how we can improve conditions in these communities.

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THE CENTER FOR ENERGY SCIENCE AND POLICY



The Schar School's Center for Energy Science and Policy is a vibrant multidisciplinary research and policy hub at George Mason University. The Center, through its renowned faculty and outstanding students, focuses on developing innovative and integrated solution for the emerging energy security, sustainability, and resilience challenge throughout Virginia and beyond.

FACULTY AND CONTACT INFORMATION



Paul Bubbosh

Adjunct Professor, Schar School of Policy and Government | pbubbosh@gmu.edu

Paul Bubbosh has 25 years of experience working in the environmental sector as the former Director of the Energy Security Division in the U.S. Department of Energy, as well as Offices under the U.S. Environmental Protection Agency. Paul currently teaches **Introduction to Energy and Climate Law** and **Principles in Energy and Climate Law**.



Dr. Joel Hicks, CDR, USN (Ret)

Adjunct Professor, Schar School of Policy and Government | jhicks19@gmu.edu

Dr. Joel Hicks is as a former U.S. Naval nuclear submarine officer and an expert in energy systems and public policy analysis. He also serves as Carlisle (PA) Borough Councilman, where he Chairs the Climate Action Committee. Joel currently teaches **U.S. Energy Policy** and **Greenhouse Gas Inventory-Based Climate Action Planning**.



Richard D. Kauzlarich, Ambassador (Ret)

Co-Director, Center of Energy Science and Policy | rkauzlar@gmu.edu

Ambassador Richard Kauzlarich is an American diplomat, writer, and intelligence analyst serving 32 years in the Foreign Service. He was the U.S. Ambassador to Azerbaijan and Bosnia and Herzegovina, and twice appointed Deputy Assistant Secretary of State. He most recently served as the National Intelligence Officer for Europe at the National Intelligence Council. Richard currently teaches **Geopolitics of Energy Security and Climate and Security Challenges**.



Erin Sikorsky

Adjunct Professor, Schar School of Policy and Government | erin.sikorsky@gmail.com

Erin Sikorsky is the Director of the Center for Climate and Security and the Director of the International Military Council on Climate and Security, following a decades-long career in national intelligence. She is also the founding chair of the Climate Security Advisory Council. Erin currently teaches **Climate and National Security**.



Michael Curtis, Ph.D.

Adjunct Professor, Schar School of Policy and Government | mcurtis3@gmu.edu

Dr. Michael Curtis is an energy and development expert, and has led energy and environmental programs in several U.S. Agency for International Development (USAID) missions. He is a scholar of energy for developing countries technological innovation and transfer. He currently teaches the course **Clean Energy Policies in Developing Countries**.



Catyana Falsetti

Graduate Lecturer, College of Humanities and Social Sciences | cfalsett@gmu.edu

Catyana Falsetti has worked in local government for over a decade. She is a doctoral candidate at GMU in the department of Sociology. Catyana's research focuses on how diversity in leadership is an important factor in creating safe, sustainable and equitable communities. Catyana currently teaches the course **Energy Equity in Low-Income & Underserved Communities**.



Scott Sklar

Guest Lecturer, George Mason University | solarsklar@aol.com

Scott Sklar heads a 22-year-old global renewable energy technology optimization owner's rep firm, The Stella Group, Ltd. Scott has been a trailblazer in renewable energy policy since in the 1970s. For 15 years, Scott ran the solar and biomass trade groups, following a 15-year stint in the U.S. Senate. Scott currently teaches the courses **Energy Equity in Low-Income & Underserved Communities** and **Local Community Infrastructure Resiliency and Policy**.



The Energy and Climate Policy Emphasis Area is an academic program designed by the Schar School of Policy and Government's Center for Energy Science and Policy. The program is made possible by the 2022 Provost Curriculum Impact Grant (CIG) and managed by the Energy and Climate Policy Program Co-Directors Paul Bubbosh and Dr. Joel Hicks.

For more information, please contact Paul Bubbosh (pbubbosh@gmu.edu) or Dr. Joel Hicks (jhicks19@gmu.edu), or visit www.cesp.gmu.edu.