SURGE

ENERGY ACADEMIC GROUP QUARTERLY NEWSLETTER SPRING 2024

## Highlights



# Operational Energy Course, Level I Pilot

By Arnold C. Dupuy, PhD
Faculty Associate—Research
Energy Academic Group

**The Energy Academic Group's Curriculum Development Team successfully completed a pilot of the Operational Energy (OE) Course, Level I, held in Monterey from March 18-22, 2024.** The pilot was developed and executed by COL (Ret.) Mike Davis and keynoted by RADM (Ret.) Lawrence Jackson, Director of the National Defense University's Center for Joint and Strategic Logistics.

The course was developed to instruct Navy and Marine warfighters on the importance of OE as a mission critical asset. Moreover, OE I was designed for undergraduate or entry level Navy and Marine officers and enlisted to provide foundational knowledge for the next generation's warfighters. The learning objectives provided a thorough overview of basic OE principles, whereby each student received instruction in four core competencies. More specifically:

**1. Fuel:** Scarcity of resources as it applies to mission accomplishment; understanding fuel types, uses and distribution within the Navy enterprise

**2. Power generation and distribution:** Basic electrical principles, both shipboard and land-based; fundamentals of grid operations; Electrification/hybridization of assets

**3. Power storage:** Basic battery maintenance and safety; Uninterruptible Power Supply (UPS) as a function of military operations; Integration of renewable energy sources

**4. Energy management:** Decision support tools, as well as current and future technologies for energy management; Geopolitical energy case studies

The practical application of each day's instruction was exercised using daily scenarios which focused on a single OE competency. These exercises, all based on INDOPACOM scenarios, enabled analysis of potential tactics or strategies to achieve a defined outcome—whether on deployment, insulating an existing facility against energy shortages, or identifying critical logistical or energy nodes for risk and/or enhanced protection. On the final day of the pilot, a culminating exercise of all four competencies allowed students to demonstrate their understanding of the major OE components across a single INDOPACOM scenario. The development of these exercises was supported by Massachusetts Institute of Technology's Lincoln Laboratory.

The pilot student body was comprised of 18 Navy and Marine personnel from a variety of ranks and specialty fields. While the pilot course was delivered in person at the Naval Postgraduate School (NPS), provisions are being made to offer it in a hybrid environment. Based on the positive feedback and comments, it is expected the OE I course will go 'live' later in 2024.

The EAG Curriculum Development Team will subsequently begin work on an Operational Energy Course, Level II designed for more experienced warfighters.

**LEARN MORE**

Contact Arnold Dupuy at
arnold.dupuy@nps.edu

# From the Chair

## Dan Nussbaum, Chair of the Energy Academic Group

**Training and education are still the baseline of what we do at the Energy Academic Group.** These two functions remain critical in that they repair what I see as a gap being a lack of concentrated and institutionalized focus on the critical trio of operational energy, installation energy, and the nexus between the two. So here are some important accomplishments and undertakings that we are working on to help bridge the current gaps.

We hosted Peter Zeihan (**zeihan.com**) for three days, during which he met with faculty and students and delivered a Secretary of Navy Guest lecture (SGL) to a sold-out crowd. Peter is, if you don't know, an expert in geopolitics and how geography impacts financial, economic, cultural, political, and military developments. In his dynamic, provocative, humorous and data- driven presentation, he explored the intersections of military strategy with global economic and demographic trends. He challenged the way we envision the future (of our allies, our adversaries, sea power, and our trading relationships). It is noteworthy that over 97% of student responses gave him top marks for his presentation.

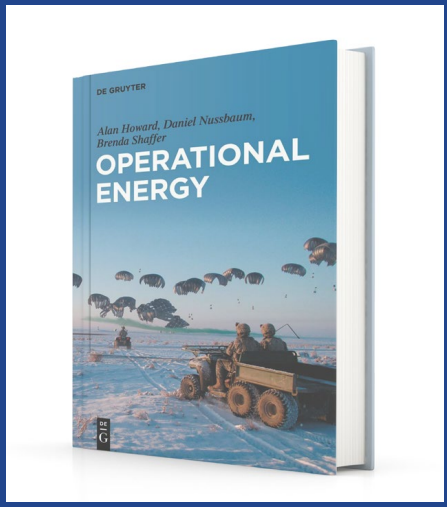
As a consequence of Russia's invasion of Ukraine, the global trade in oil and gas has been upended and is evolving to a new equilibrium. Much of this resetting takes place in full public view, but it is paid attention to only by those immersed in the trade or by scholars of it. Professor Brenda Shaffer is one of those scholars, and she presents, in a recent interview, important insights into a recent, very important event in this global resetting. That event is the memorandum of agreement (not a contract, as she points out) between Turkmenistan and Azerbaijan. Here is a link (**https://tinyurl.com/yfph95cm**) to her very good interview on this recent important deal in the global natural gas market. Professor Shaffer brings clarity and insight to what is usually an obscure, but important, topic.

We have just successfully concluded the pilot presentation of our OE 1 course, including 20 students who took the class and provided feedback, and 30 VIPs from various services who also provided their feedback. This input will be useful to the OE community when we roll this out in production mode. As a reminder, the OE 1 course is designed for joint, mid-grade enlisted and company-grade officers. Its aim is to introduce the audience to the concepts of OE and how their choices, regardless of their military specialty, matter. Also, the course is designed to be modular, allowing delivery of portions of the curriculum for future training audiences.

We also continue three certificate programs in: Contested Logistics, Directed Energy, and Autonomous Systems. These asynchronous graduate certificate programs and their respective courses are available now, and they are cost- free to participants. They are offered quarterly, with one course per quarter for professional workforce officers and civilians. Additionally, we are currently designing and developing additional certificates in: Geopolitical Energy, Batteries, Microgrids, and Climate Security.

Kudos to Eric Hahn for persistently pursuing and then successfully putting in place a Cooperative Research and Development Agreement (CRADA) between NPS and Pareto Energy. The purpose of this CRADA is to develop tools and intellectual capital in Model Based Systems Engineering and Digital Twins for optimized Integrated Energy Systems for Installations.

Kudos to Larry Walzer, who, on behalf of EAG, accepted a commendation from the Lithuanian Minister of Defense that recognizes EAG's support to the educational mission of the NATO Energy Security Center of Excellence.




The textbook *Operational Energy* is expected to be published in May by De Gruyter Brill, a highly respected German publishing house. I look forward to your comments about the book, especially the good and bad of it as well as what's missing, so that we can address your feedback in subsequent editions, and—in the end—provide a useful reference for the OE community.

Welcome to new members of the EAG team:

- Doug Jones is a retired Naval Officer with 25 years of service. His last posting was on the staff of COMNAVSURFPAC. He is a Human Resources Officer who served as

NPS Director of Programs and has a wealth of experience in managing academic programs.

- Gianluca Douros is a 2022 summa cum laude graduate in International Business with a Marketing and Western Europe emphasis. He is fluent in both Spanish and Italian.

As always, I encourage you to reach out to me and to the POCs in this article. We would be happy to hear your ideas, and we encourage your suggestions for other avenues we should pursue that would be helpful in your work or that you think the larger energy community needs.

**CONTACT**
**DR. DAN NUSSBAUM**
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or call 831-324-3228.


*Retired Vice Adm. Ann Rondeau presents Dr. Daniel Nussbaum a 45-year service award.*

## Celebrating Dr. Daniel Nussbaum's 45-Year Legacy of Excellence

**We take pride in acknowledging an important milestone achieved by our Chair, Dr. Daniel Nussbaum. Honored with a 45-year service award, Dr. Nussbaum's dedication and contribution to the federal government underscore a career built on excellence, innovation, and unwavering commitment.**

The award, a testament to Dr. Nussbaum's impactful service, was presented by the president of the Naval Postgraduate School, retired Vice Adm. Ann Rondeau, in a ceremony that highlighted not just the duration, but the quality of Dr. Nussbaum's service to the DoD. His role in shaping programs and policies, teaching and mentoring future leaders, and contributing to the body of knowledge in cost estimating and operational energy over the last 45 years has left an indelible mark on the fabric of our organization and the broader community we serve.

As we celebrate this achievement, we extend our gratitude to Dr. Nussbaum for his years of service, leadership, and mentorship. His legacy is a testament to the profound impact one individual can have on an organization and a grateful nation.

Congratulations, Dr. Nussbaum, on this well-deserved recognition. Your tireless dedication and exemplary service set a standard for us all. May your journey continue to inspire future generations.

# Energy Academic Group Welcomes New Team Members

**Gianluca Douros joined the Energy Academic Group (EAG) in February 2024 as a Faculty Associate-Research.** Douros' background is in marketing; his tenures both in-house and agency-side focused on market research, creation of globally scaled content campaigns, and corporate storytelling. His experience also includes management of procurement, logistics, and events for organizations in the viticulture and residential development industries. With EAG, Douros' efforts are centered on Curriculum Development in support of the Battery Workforce Development project. Contact Gianluca at **gianluca.douros@nps.edu**.

*Gianluca Douros*

**Doug Jones joins the Energy Academic Group (EAG) after serving for 25 years as a Naval Officer**. Doug began his career as a Nuclear Power Instructor before transferring into the Human Resources community. He has served tours in education and training, recruiting, competency development, acquisitions, Global Force Management, as well as force development and manpower requirements. Doug is no stranger to NPS; he earned his master's degree in Human Systems Integration, a Systems Engineering certificate, served as the Deputy Director of the HR Center of Excellence and was the former NPS Director of Programs. During his time as a graduate student, he was one of a few students selected as a CNO Strategic Studies Director Fellow where he helped generate innovative, revolutionary naval warfare concepts for the Chief of Naval Operations. He recently completed his time as the Director for Culture and Inclusion for Commander, Naval Surface Forces, Pacific. Doug is excited to bring his expertise and enthusiasm to the EAG Team as a research faculty associate, working alongside Dr. Mary Sims, helping enhance battery and workforce minerals competency development programs for the federal government, academia, and industrial sectors. Feel free to contact and welcome Doug at **douglas.jones@nps.edu**.

*Doug Jones*

## Interested in Energy-related Thesis Research?

Since 2013, NPS and the EAG have supported a plethora of student thesis research in the area of energy. Publicly viewable student theses can be searched from the Resources page of the EAG website at **nps.edu/web/eag/resources**. The EAG's extensive resources, intellectual capital, and connections with multi-disciplinary faculty and energy professionals provide students enhanced support for energy-related research. If interested in energy research, please reach out to the EAG team!

**nps.edu/energy**

*NPS Climate Fellows on a tour at Stanford's Hopkins Marine Station in Pacific Grove, CA*

CLIMATE SECURITY

# Perspectives from a Climate Security Fellow

By Marina Lesse,
Faculty Associate-Research,
Energy Academic Group

**Climate change is one of the greatest threats facing humanity, with impacts being felt throughout the world. It will take effort, initiative, and collaboration across many sectors of every industry to tackle this pressing challenge.** Shaping the perspective of young minds and researchers who face the impacts of climate change is advantageous to both the civilian and military sectors. Combining those two populations introduces new ideas and solutions that strengthen humanity's chances to stop the devestating outcomes of climatic disasters.

Over the past year, I've had the opportunity to participate in the Joint Naval Postgraduate School (NPS) and Stanford Doerr School of Sustainability's Climate Security Fellows program. The program is organized through an Education Partnership Agreement between the two schools, and aims to enrich graduate students experiences by creating a space to learn about and discuss issues in climate change, national security, and sustainability. Throughout the academic year, numerous subject matter experts have delivered presentations to the cohort on a wide variety of climate and security issues.

This opportunity for both military and civilian students to learn together and interact opens the door for thought provoking and diverse conversation around the challenges of climate change. The program brings together like-minded individuals who—as fellows—provide valuable insight and diverse perspectives on the topic. Some of us are civilians in defense careers; some are students attending Stanford's graduate programs; and others are active duty military personnel attending the NPS. Each of us has a unique background and offers diverse solutions and ideas that others may not have thought of, such as connecting the dots between marine biology and human food security.

I believe the communication fostered by programs like this and its members will bring about real world solutions to our most pressing problems. While the fellowship only lasts a year, I hope each fellow will bring the knowledge and lessons learned from this program to their future Command or workplace over the course of their career.

The Joint NPS and Stanford Doerr School of Sustainability's Climate Security Fellows Program will wrap up its pilot year in spring of 2024. The Fellowship will end with a joint report on pressing topics of the cohort's choosing. The next cohort of Climate Security Fellows will begin in the fall.

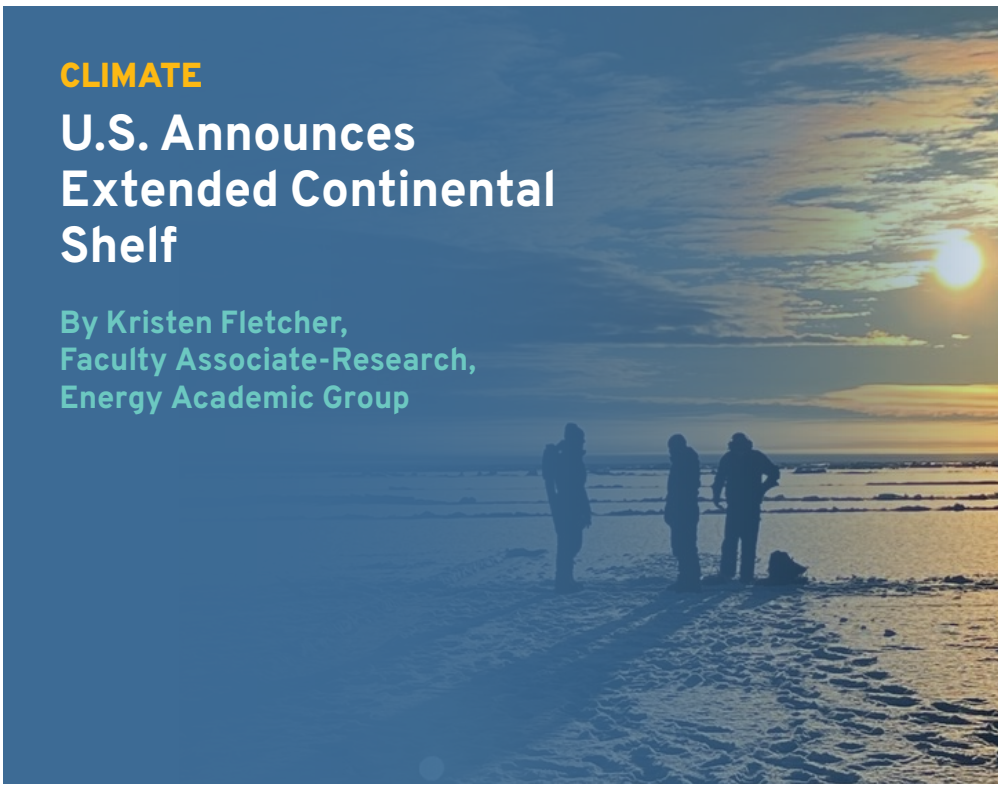
**LEARN MORE**

Contact Marina Lesse at **marina.lesse@nps.edu** to learn more about the Climate Security Fellows Program.

CLIMATE

# U.S. Announces Extended Continental Shelf

By Kristen Fletcher,
Faculty Associate-Research,
Energy Academic Group




*U.S. Extended Continental Shelf Regions*

**In December, the U.S. announced the outer limits of its extended continental shelf (ECS), the portion of the continental shelf beyond 200 nautical miles from the U.S. coast, marked by territorial sea baselines.** Coordinated by the multi-agency ECS Task Force, the package describes the outer limits of the U.S. ECS in the following regions: Arctic, Atlantic, Bering Sea, Eastern Gulf of Mexico, Western Gulf of Mexico, Mariana Islands and Pacific. With this announcement, the U.S. has added almost 1 million additional square kilometers of exclusive seabed rights beyond 200 nautical miles from the U.S. coast.

Using two decades of marine geophysical data, the U.S. applied provisions of Article 76 of the United Nations Convention on the Law of the Sea (UNCLOS) to delineate the outer limits of its continental shelf. While the U.S. has not ratified UNCLOS, it is U.S. policy to "act in a manner consistent with its provisions" and considers many UNCLOS provisions to be customary international law. Like other countries with an ECS, the U.S. has sovereign rights and exclusive jurisdiction in this area for the purposes of exploring, conserving and managing the living and non-living resources.

The largest area of the ECS is in the Arctic, and the announcement has significant implications there. With this extension, the U.S. claims exclusive rights to resources on and in the seabed and jurisdiction over certain activities including any form of drilling and any placement of artificial platforms. The effort aligns with the 2022 National Strategy for the Arctic Region which provides that the U.S. will "delineate the outer limits of the U.S. continental shelf in accordance with the international law as reflected in [UNCLOS]." The declaration of ECS limits by all five Arctic littoral states makes it clear that the majority of the Arctic seabed is within the national jurisdiction of one of the five states. The U.S. announcement is consistent with the 1990 maritime agreement established with Russia, while the U.S. and Canada will need to establish clear boundaries as the U.S. ECS partially overlaps with ECS areas of Canada. In addition, the U.S. ECS now partially overlaps with ECS areas of The Bahamas and Japan.

The ECS is not an extension of the Exclusive Economic Zone (EEZ); some rights that a state has in its EEZ, especially sovereign rights over water column resources (such as fish), do not apply to the ECS. The U.S. can file its submission package with the Commission on the Limits of the Continental Shelf upon UNCLOS ratification or file as a non-Party to the Convention. For now, the U.S. has issued a unilateral announcement to announce its intent to protect its rights in these areas.

## LEARN MORE

Visit the State Department ECS site at:
**https://www.state.gov/the-us-ecs/**

Read the Executive Summary at:
**https://tinyurl.com/362dhera**

Contact Kristen Fletcher at
**kristen.fletcher@nps.edu**

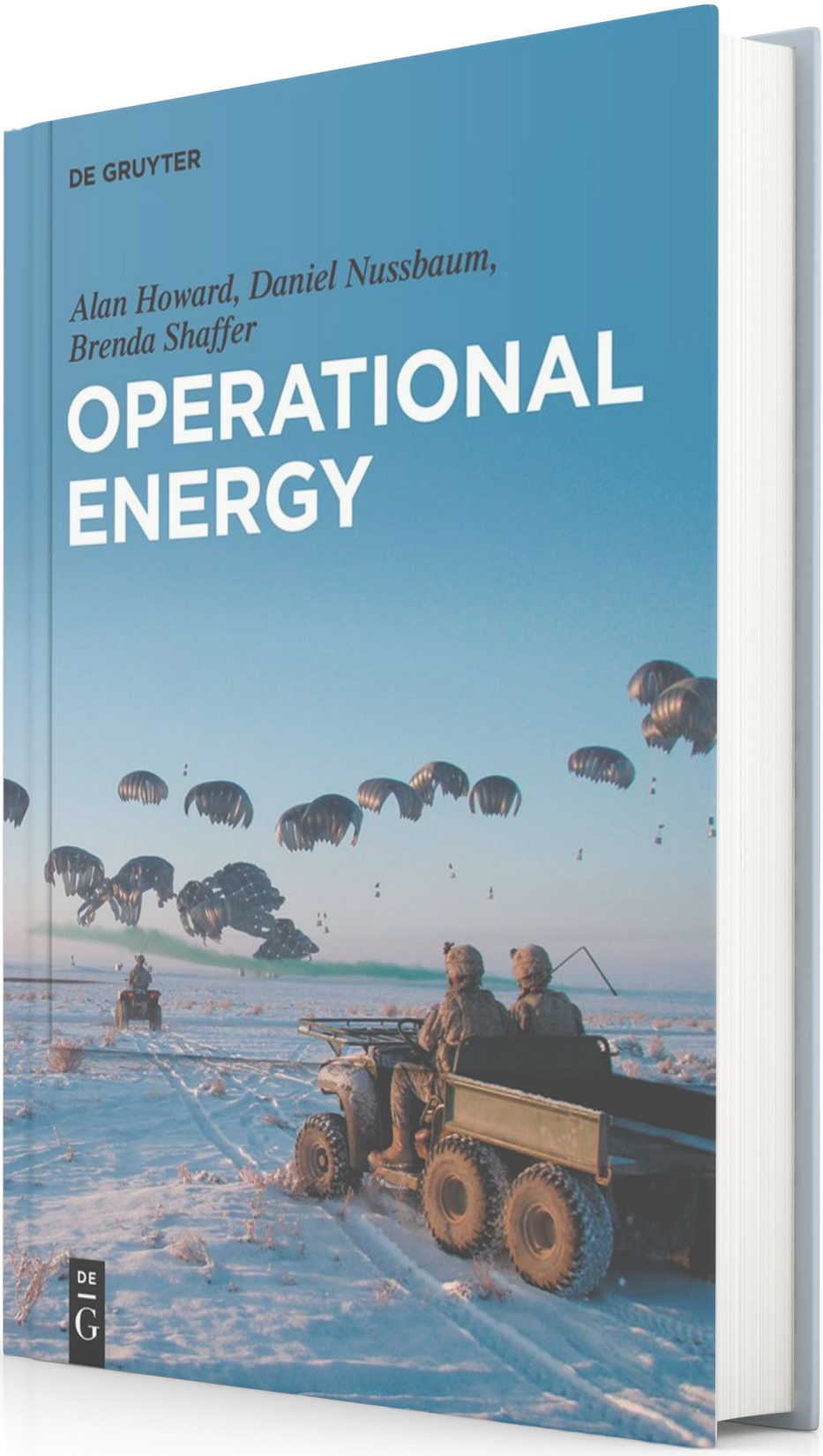
OPERATIONAL ENERGY

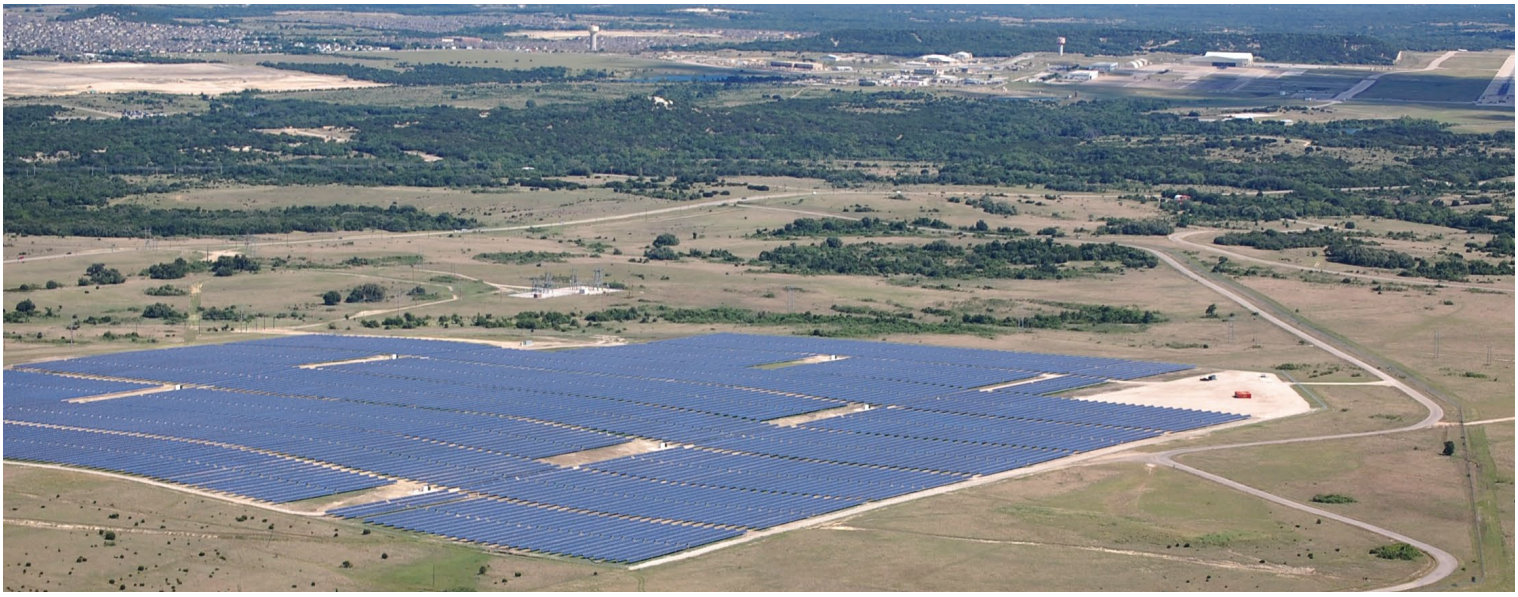
# New Operational Energy Textbook from EAG Faculty

**Exciting news from our Energy Academic Group!** We're thrilled to announce the forthcoming publication of *Operational Energy,* a groundbreaking textbook co-authored by our very own faculty members, Alan Howard, Daniel Nussbaum, and Brenda Shaffer. This comprehensive work illuminates the critical role of energy as both an enabler and a constraint on military power, providing essential knowledge for military officers, defense strategists, and students in the field.

*Operational Energy* stands as the sole textbook dedicated to the intricacies of defense energy planning, analysis, and strategy. It delves into fuel types, geopolitical issues, energy supply risks, and the economic factors of the energy market, alongside offering forward-looking topics for research. Designed for students, scholars, U.S. Department of Defense and NATO course participants, and researchers on U.S. and global energy security, this book is an invaluable resource for understanding the pivotal role of energy in modern warfare and national defense.

Join us in anticipating its release in May 2024, and dive into the only resource you'll need to grasp the complexities of operational energy planning and its significance in achieving battlefield success. Stay tuned for more details!





*Fort Cavazos in Texas (formerly Fort Hood), where solar panels strategically positioned on open land harness solar energy to meet operational demands*

CLIMATE SECURITY

# Navigating Complexity: U.S. Military's Response to Climate-Driven Energy and Resource Challenges

By Emily Pesicka, PhD
ORISE Postdoc
Energy Academic Group and Center for Infrastructure Defense

**The nexus between climate change and national security is increasingly visible within the U.S. military, transcending conventional environmental considerations to embrace complex and multidimensional challenges.** Acknowledging that climate change triggers shifts in energy dynamics and resource availability is essential. Heightened global demand for alternative energy sources and intensifying competition over scarce resources create the opportunity for elevated geopolitical tensions. The U.S. military has actively embarked on two principal lines of effort pertaining to energy and resources: military base renewable energy initiatives and strategic resource competition.

The U.S. military has substantially invested in renewable energy initiatives to enhance energy resilience, including implementing solar energy technologies and sustainable energy networks at U.S. military bases. Exemplary efforts include those at Fort Cavazos in Texas (formerly Fort Hood), where solar panels strategically positioned on rooftops and open land harness solar energy to meet operational demands. Simultaneously, Naval Station Norfolk in Virginia has undertaken a comprehensive integration of solar panels on rooftops and carports, complemented by solar-powered street lighting systems. Furthermore, efforts to strengthen and expand energy resilience through microgrid installation at Marine Corps Air Station Miramar made this one of the most energy-forward installations in the U.S.

These initiatives, crucial for enhancing energy resilience and reducing reliance on traditional fossil fuels, also present a diplomatic challenge due to the strategic competition for rare earth minerals. These minerals are essential components for advanced military technologies. Addressing this challenge necessitates strategic foresight, diplomatic overtures, and concerted efforts in developing resource-efficient technologies to preclude potential conflicts arising from the critical scarcity of these resources.

As a top consumer of energy and resources, the U.S. military is prudently orienting itself toward sustainability imperatives. Embracing renewable energy and resource-efficient technologies for the U.S. military is not merely emblematic of operational resilience but also represents a strategic response to mitigate security risks associated with resource scarcity. This pragmatic approach is pivotal in ensuring the U.S. military's adaptive capacity and overall efficacy in navigating the dynamic and intricate terrain of climate-induced security challenges.

## LEARN MORE

Visit the United States Army Climate Strategy here:
**https://tinyurl.com/yt44s6nk**

Visit the Department of the Navy Installation Energy Resilience Strategy here:
**https://tinyurl.com/mryhtfht**

Visit the United States Marine Corps Energy Resilience Webpage here:
**https://www.mcicom.marines.mil/Sections/Energy/**

Contact Emily Pesicka at
**emily.pesicka@nps.edu**

CLIMATE SECURITY

# Energy Training Module Completed by nearly 4,000 Personnel

By Andrew Jennings, Faculty Associate-Research, Energy Academic Group

**Following the launch of the energy training module titled Energy—Enabling Combat Operations (product number NPS-E-ECO-1.0) in November of 2022, the course has been successfully completed by nearly 4,000 personnel!** The General Military Training (GMT) module is designed for both civilians and active-duty enlisted and officer members of the Department of the Navy (DoN), both sailors and Marines, and enables learners to harness a greater understanding of the DoN's operational energy focus. The learning objectives include how energy is critical to combat operations, DoN strategic energy objectives, energy challenges and best practices for different naval communities, and actions to take to become a more effective warrior. The GMT is a product of EAG's multi-year initiative: Naval Enterprise Energy Education and Training (NE3T).

To enroll and complete the updated GMT:

1. Log into your Navy e-Learning account at **https://learning.nel.navy.mil/ELIAASv2p/**
2. Click the 'Course Catalog' tab
3. Search 'Energy - Enabling Combat Operations'
4. Enroll, launch, and complete the course module

**LEARN MORE**

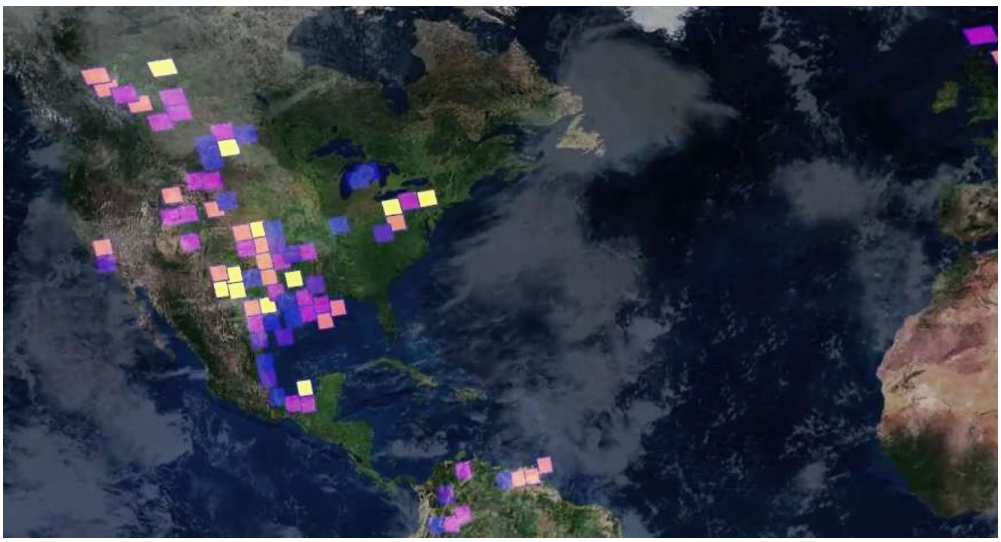
Contact Andrew Jennings at **andrew.jennings@nps.edu**


## Defense Energy Seminar Series

NPS' academic programs in Defense Energy are supplemented by a seminar series which provides a forum for leading voices within the field, practitioners, and other Defense Energy influencers. These professionals give presentations, engage in brown bag discussions, and facilitate informal gatherings that encourage Defense Energy faculty and students to discourse over current issues in Defense Energy, supplementing classroom teaching with practical, professional experiences. The Defense Energy Seminars Series is a permanent part of NPS' Defense Energy program, and a key to its real-world relevance.

**LEARN MORE**

Please see the Calendar of Events in this issue of *Surge* or visit **nps.edu/web/eag/seminars** for upcoming and archived seminars.



*MethaneSAT will scan 80% of the world's oil and gas producing regions. Using a comprehensive database of oil and gas infrastructure, MethaneSAT will in many cases be able to identify operators with assets in high-emitting areas.*

CLIMATE SECURITY

# Efforts to Address Methane Leaking Energy and Resource Challenges

By Kristen Fletcher, Faculty Associate-Research, Energy Academic Group

**In the winter of 2024, the U.S. Department of the Interior (DOI) established an Orphaned Wells Program Office to address methane leaking from unplugged and orphaned oil and gas wells.** Methane leaking contributes significantly to climate change as methane is more than 25 times as potent as carbon dioxide at trapping heat in the atmosphere. In 2024, DOI has allocated an initial $33 million to clean up 277 orphaned wells in national parks, national forests, national wildlife refuges and other public lands, and distributed the first $560 million in initial grants to states to set up well plugging infrastructure and address high-priority wells.

Plugging orphaned wells will help advance the goals of the 2021 U.S. Methane Emissions Reduction Plan. In March, MethaneSAT was launched as a partnership of American institutions and the New Zealand Space Agency. The goal is to monitor and study global methane emissions in order to combat climate change.

**RELEVANT LINKS**

U.S. Department of the Interior Release
**https://tinyurl.com/cz6phfwb**

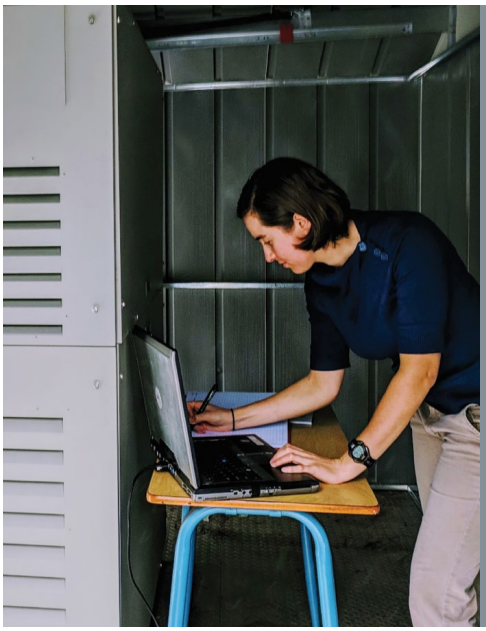
U.S. Department of the Interior Draft Guidance
**https://tinyurl.com/48pwz89h**

U.S. Methane Emissions Reduction Action Plan (2021)
**https://tinyurl.com/3uw2nfbj**

MethaneSAT
**https://www.methanesat.org**

**LEARN MORE**

Contact Kristen Fletcher at
**kristen.fletcher@nps.edu**



# Operational Energy Research Available on Calhoun

All NPS resident students write a thesis or capstone project report as part of their curricular requirements. Many theses are unclassified and accessible on Calhoun—the Naval Postgraduate School's digital repository for research materials and institutional publications created by the NPS community. To access theses which involve operational energy, please use the following link. New theses are added every quarter.

View operational energy theses available on Calhoun:
**https://calhoun.nps.edu/**

ENERGY RESEARCH

# Coherent Resilience Tabletop Exercise Moldova

## By Tahmina Karimova, Faculty Associate-Research, Energy Academic Group

**The Energy Academic Group (EAG), through close partnership with NATO's Energy Security Center of Excellence (ENSEC COE), participated in the Coherent Resilience (CORE) Tabletop Exercise (TTX) in Chisinau, Moldova from 12–14 March 2024.** CORE is a series of national and regional level tabletop exercises developed by the ENSEC COE and executed in different countries on an annual basis. The Moldova event brought together a diverse group of attendees, representing organizations across the government, academic, military, and industry spectrum. The focus of the exercise was to examine hybrid risks to Moldova's critical energy infrastructure and energy supply, with an emphasis on the nexus between energy and cyber security. During the exercise, participants were organized into three syndicate groups, each representing an area of subject matter expertise. This year's syndicates were Critical Energy Infrastructure Protection, Crisis Response, and Strategic Communications. Each syndicate worked through the TTX scenario and corresponding injects. On the last day of the exercise, the individual syndicates briefed their outcomes to senior leaders and other distinguished visitors. Key takeaways, lessons learned, and recommendations that come out of the exercise will be included in a final exercise report which can serve as a guide for improving international, national, and regional cooperation in the face of emerging threats. The NPS evaluation team was compromised of faculty and students from the departments of Computer Science, Defense Analysis, Systems Engineering, and EAG, along with Navy Reservists from the Office of Naval Research. Practical opportunities such as the CORE TTX are critical in strengthening collaboration with our alliance and partners. As the world continues to face evolving threats and challenges, exercises like the CORE are essential for ensuring preparedness, resilience, and crisis management and response at the national and regional levels.


*Opening remarks at the Coherent Resilience Tabletop Exercise in Chisinau, Moldova held 12–14 March 2024*

**LEARN MORE**

Contact Tahmina Karimova at ttkarimo@nps.edu

ENERGY RESEARCH

# NATO Operational Energy Concept Development

## By Tahmina Karimova, Faculty Associate-Research, Energy Academic Group

**The Naval Postgraduate School's Energy Academic Group (EAG) hosted the NATO Operational Energy Concept (OEC) working group from 26–29 February 2024.** The event was jointly organized with the NATO Energy Security Center of Excellence (ENSEC COE) and EAG. In early 2021, the ENSEC COE in coordination with the NATO Supreme Allied Commander Transformation (SACT) and in close collaboration with partner organizations, started developing the OEC that—when approved—will serve as guidance for deployed NATO forces.

The February meeting brought together a diverse group of 40 NATO allies and partner organizations, as well as military and academic representatives. This effort served as the final step in writing the OEC, which will be submitted for approval to HQ SACT in late spring of 2024.

The key takeaway from the meeting was that the future challenge will be security of energy supply at the right time and in the right places, while accounting for climate concerns.

EAG has been actively involved in developing and executing an extensive portfolio of OE-related research, education, and outreach efforts to effectively address emerging and complex needs of naval forces, DoD, and allied partners. The OEC and our energy-focused collective work serve as a solid demonstration of the value of our Alliance and our cooperation.

*Participants in the NATO Operational Energy Concept (OEC) working group held 26–29 February 2024*

**LEARN MORE**

Contact Tahmina Karimova at ttkarimo@nps.edu

# Calendar of Events and Important Dates

## APRIL

April 16, 2024 • 12:00–12:50 pm PT
**Joint Climate & Security Network and Defense Energy Seminar "Global Climate and Energy Policy Trends—2024 and Beyond"**
Speaker: Jessica Yllemo, Director, Climate Security Programs, American Security Project
*In person only: MAE Auditorium, Naval Postgraduate School. For full event details, go to* ***nps.edu/web/climate-and-security/events***

April 22–26, 2024
**Philippines Energy Resilience TTX**
*Batanes province, Philippines*

## MAY

May 2, 2024 • 10:00 am–12:00 pm PT
**Seapower Conversation: "Security Challenges from Rising Seas" Joint event with the NPS Naval Warfare Studies Institute**
*Hybrid / Naval Postgraduate School*
*For full event details and to register, go to:* ***nps.edu/web/climate-and-security/events***

May 7, 2024
**Black Sea Energy Security Conference**
*Washington, D.C.*

May 13–17, 2024
**Energy Efficiency in Military Operations Course (EEMOC)**
*Vilnius, Lithuania*

May 28, 2024 • 12:00 – 12:50 PM PT
**Tackling Energy Sector Challenges by Intersecting Materials, Manufacturing, and Systems**
Speaker: Saniya LeBlanc PhD, George Washington University
*In person only: MAE Auditorium, Naval Postgraduate School. For full event details, go to* ***nps.edu/web/climate-and-security/events***

## UPCOMING

**2024 Defense Energy Seminar Series**
*Watch for upcoming dates and full event details as they become available on the EAG website at* ***nps.edu/web/eag/seminars***

## EVENT UPDATES

*For updates to our calendar, please visit the EAG website and Events tab at* ***nps.edu/web/eag/events***

ENERGY ACADEMIC GROUP
NAVAL POSTGRADUATE SCHOOL

## Connect with the Energy Academic Group

The Energy Academic Group is located in Suite 537, Spanagel Hall on the NPS campus in Monterey, California. A wide range of NPS faculty are affiliated with the energy program, actively participate in energy graduate education, energy executive education, and energy research. For questions, please contact one of the principal EAG faculty members:

**CHAIR**
**Dr. Daniel Nussbaum**
danussba@nps.edu
831-324-3228

**ASSOCIATE CHAIR**
**Alan Howard**
arhoward@nps.edu

**ENERGY ENGINEERING AND INNOVATION**
**LCDR Eric Hahn, USN, Ret.**
ehahn1@nps.edu

**ENERGY CURRICULUM DEVELOPMENT**
**Dr. Arnie Dupuy**
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**ENERGY AND SECURITY THREATS**
**LtCol Lawrence Walzer, USMC, Ret.**
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**CLIMATE AND SECURITY**
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