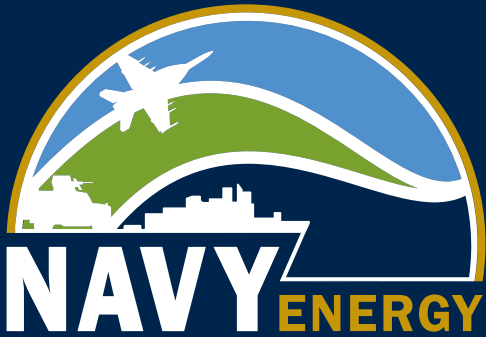


NAVY ENERGY FORUM

Seapower Repowered: Energy as a Force Multiplier and Strategic Resource



FORUM HIGHLIGHTS:

- ▶ Presentation of the “Navy Energy Vision”
- ▶ Keynote Addresses by Secretary Ray Mabus, Admiral Gary Roughead, and other Distinguished Guests
- ▶ Panel Discussions on Progress to Energy Goals, Alternative Fuels, Lifecycle Costs, and Grid Security
- ▶ Opportunities to Engage with Navy Task Force Energy Working Groups and Industry Representatives



A WELCOME MESSAGE

On behalf of Navy Task Force Energy, I would like to welcome you to the 2010 Navy Energy Forum.

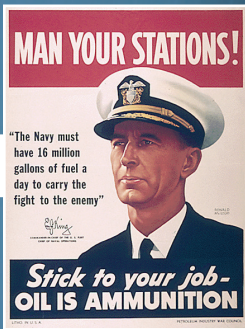
The past year has been exciting for the Navy in our efforts to achieve greater energy security for the Navy and the Nation. Last year, the Secretary of the Navy announced ambitious energy goals, and we will discuss the significant progress that has been made toward meeting those goals. This year, we will present the Navy Energy Vision, which brings together the efforts of Task Force Energy to define ends, ways, and means for energy security. Fundamental to this quest for greater energy security remains our focus on enhancing combat capability or enabling greater resilience of our shore support infrastructure. No investment or effort is made unless it supports these foundational requirements.

As the N4, I am also particularly concerned with reducing the total ownership costs of our ships, aircraft and buildings. One of the most important aspects of managing these costs is mitigating the risk of increased energy prices. I'm proud to say that we have budgeted for investments in technology and culture change initiatives that will help bend that curve. We will hear from our own officers on how the Navy will seek to reduce lifecycle costs in the current and future fleet. These actions will ensure that we can maintain readiness in the face of an evolving global security environment.

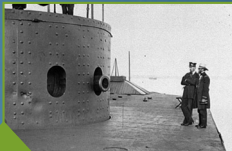
We have set a high bar for ourselves. More and more people are talking about energy challenges and what needs to be done to address them. Most important, people are taking action. However, we need to keep working. Whether you are a scientist, engineer, entrepreneur, policymaker, communicator, or executive, you have a role to play as we pursue our Navy Energy Vision. I encourage you to take advantage of breaks in the program to exchange information with our Task Force Energy Working Group representatives.

Vice Admiral Bill Burke, USN





Energy security has always been key to completing the mission...



Past



Present



Future



...and the Navy has always been a leader in energy innovation for strategic and tactical advantage.

The Secretary of the Navy Energy Goals set a course for the next energy transformation.

Increase Alternatives Afloat

By 2020, 50% of total DON energy consumption will come from alternative sources

Increase Alternatives Ashore

By 2020, DON will produce at least 50% of shore-based energy requirements from alternative sources; 50% of DON installations will be net-zero

Sail the "Great Green Fleet"

DON will demonstrate a Green Strike Group in local operations by 2012 and sail it by 2016

Reduce Non-Tactical Petroleum Use

By 2015, DON will reduce petroleum use in the commercial fleet by 50%

Energy Efficient Acquisition

Evaluation of energy factors will be mandatory when awarding contracts for systems and buildings

POLICY & PARTNERSHIPS

TUESDAY, OCTOBER 12, 2010

- 7:15am - 8:15am Registration Open - Atrium Hall Foyer Ground Level
Continental Breakfast Available in Hall Foyer Concourse Level
- 8:00am - 8:15am **PRESENTATION OF COLORS**
Naval Medical Research Center and Walter Reed Army Institute of Research Honor Guard
- 8:15am - 8:45am **WELCOME & OPENING REMARKS** - Atrium Hall
▶ RADM Philip Cullom, *Director, Energy and Environmental Readiness Division (OPNAV N45), Director, Navy Task Force Energy*
- 8:45am - 9:15am **OPENING KEYNOTE**
▶ ADM Gary Roughead, *Chief of Naval Operations*
- 9:15am - 10:15am **PANEL: BUILDING A FOUNDATION FOR THE GREEN FLEET**
Moderated by Mr. Tom Hicks, *Deputy Assistant Secretary of the Navy (Energy)*
▶ RADM Thomas J. Eccles, *Chief Engineer and Deputy Commander for Naval Systems Engineering, Naval Sea Systems Command*
▶ RDML David Boone, *Director, Shore Readiness Division (N46), Office of the Chief of Naval Operations and Vice Commander, Navy Installations Command*
▶ RDML Randolph L. Mahr, *Commander, Naval Air Warfare Center Aircraft Division and Assistant Commander for Research and Engineering, Naval Air Systems Command*
- 10:15am - 10:30am **BREAK - VISIT DISPLAYS IN ATRIUM**
Refreshments Available in Atrium Hall Foyer Concourse Level
- 10:30am - 11:15am **DEFENSE ENERGY POLICY**
▶ Honorable Sharon Burke, *Director, Operational Energy Plans and Programs, Office of the Secretary of Defense*
- 11:15am - 12:00pm **NATIONAL ENERGY SECURITY**
▶ Honorable Daniel B. Poneman, *Deputy Secretary of Energy*
- 12:00pm - 1:00pm **LUNCH IN THE ATRIUM - VISIT DISPLAYS**
- 1:00pm - 1:30pm **ENERGY SECURITY KEYNOTE**
▶ Former Senator John Warner (R-VA)
- 1:30pm - 2:30pm **PANEL: ENABLING AN ENERGY TRANSFORMATION THROUGH DROP-IN ALTERNATIVE FUELS**
Moderated by RDML Kurt Kunkel, *SC, USN, Commander, Defense Logistics Agency - Energy*
▶ Dr. Srimi Mirmira, *Associate Director for Commercialization, Advanced Research Projects Agency - Energy*
▶ Dr. Jim Rekoske, *Vice President and General Manager for Renewable Energy and Chemicals, Honeywell UOP*
▶ Dr. Jeffrey Steiner, *National Program Leader for Biomass Production Systems, USDA Agricultural Research Service*
▶ Mr. Timothy Vinopal, *Chief Engineer for the Environment, Boeing Defense Space and Security*
- 2:30pm - 3:00pm **BREAK - VISIT DISPLAYS**
Refreshments Available in Atrium Hall Foyer Concourse Level
- 3:00pm - 3:45pm **ENERGY SECURITY AND FLEET READINESS**
▶ VADM Bill Burke, *Deputy Chief of Naval Operations for Fleet Readiness & Logistics (N4)*
- 3:45pm - 4:30pm **THE FUTURE OF ENERGY**
▶ Dr. George Friedman, *CEO and Founder, STRATFOR*
- 4:30pm - 5:30pm **RECEPTION IN THE ATRIUM - VISIT DISPLAYS**

TECHNOLOGY & CULTURE CHANGE

WEDNESDAY, OCTOBER 13, 2010

- 7:00am - 8:00am Registration Open - Atrium Hall Foyer, Ground Level
Continental Breakfast Available in Atrium Hall Foyer, Concourse Level
- 8:00am - 8:30am **TECHNOLOGY KEYNOTE**
▶ Honorable Sean J. Stackley, *Assistant Secretary of the Navy (Research, Development & Acquisition)*
- 8:30am - 9:15am **PRESENTATION OF THE NAVY ENERGY VISION**
▶ RADM Philip Cullom, *Director, Energy and Environmental Readiness Division (OPNAV N45), Director, Navy Task Force Energy*
- 9:15am - 9:30am **BREAK - VISIT DISPLAYS**
- 9:30am - 10:30am **PANEL: THE WAY AHEAD FOR REDUCING LIFECYCLE ENERGY COSTS**
Moderated by RADM Philip Cullom, *Director, Energy and Environmental Readiness Division (OPNAV N45), Director, Navy Task Force Energy*
▶ RADM Nevin P. Carr, Jr., *Chief of Naval Research, Director, Test and Evaluation and Technology Requirements*
▶ RDML Donald Gaddis, *Program Executive Officer Tactical Air*
▶ RDML David H. Lewis, *Program Executive Officer Ships*
▶ RDML James P. McManamon, *Deputy Commander for Surface Warfare, SEA 21, Naval Sea Systems Command*
- 10:30am - 11:00am **BREAK - VISIT DISPLAYS**
Refreshments Available in Atrium Hall Foyer Concourse Level
- 11:00am - 12:00pm **PANEL: MISSION ASSURANCE, RENEWABLES AND THE SMART GRID**
Moderated by RDML David Boone, *Director, Shore Readiness Division (N46), Office of the Chief of Naval Operations and Vice Commander, Navy Installations Command*
▶ Mr. Tom Bowe, *Executive Director, Reliability Integration Division, PJM Interconnection*
▶ Mr. Arthur "Chip" Cotton, *Program Manager Energy R&D, General Electric Global Research*
▶ Mr. Mark Wagner, *Vice President Government Relations, Johnson Controls, Inc.*
- 12:00pm - 1:00pm **LUNCH IN THE ATRIUM - VISIT DISPLAYS**
- 1:00pm - 1:30pm **GRID SECURITY POLICY**
▶ Honorable Patricia A. Hoffman, *Assistant Secretary, Electricity Delivery and Energy Reliability, U.S. Department of Energy*
- 1:30pm - 2:15pm **ENERGY AND THE GLOBAL FUTURE ECONOMY**
▶ Dr. Daniel Yergin, *Chairman, IHS Cambridge Energy Research Associates*
- 2:15pm - 3:00pm **DISTINGUISHED SPEAKER**
▶ Honorable Ray Mabus, *Secretary of the Navy*
- 3:00pm - 3:30pm **CLOSING REMARKS**
▶ RADM Philip Cullom, *Director, Energy and Environmental Readiness Division (OPNAV N45), Director, Navy Task Force Energy*



HONORABLE RAY MABUS, SECRETARY OF THE NAVY

Ray Mabus is the 75th United States Secretary of the Navy. As Secretary, he leads America's Navy and Marine Corps and is responsible for an annual budget in excess of \$150 billion and almost 900,000 people. Prior to joining the administration of President Barack Obama, Mabus served in a variety of top posts in government and the private sector. In 1988, Mabus was elected Governor of Mississippi. As the youngest governor of Mississippi in more than 100 years at the time of his election, he stressed education and job creation. He passed B.E.S.T. (Better Education for Success Tomorrow), one of the most comprehensive education reform programs in America, and was named one of Fortune Magazine's top ten education governors. He was appointed Ambassador to the Kingdom of Saudi Arabia for the Clinton Administration in 1994. Prior to becoming Governor he was elected State Auditor of Mississippi and served as a Surface Warfare Officer in the U.S. Navy aboard the cruiser USS Little Rock. Secretary Mabus is a native of Ackerman, Miss., and received a Bachelor's Degree from the University of Mississippi, a Master's Degree from Johns Hopkins University, and a Law Degree from Harvard Law School.



ADMIRAL GARY ROUGHEAD, CHIEF OF NAVAL OPERATIONS

Admiral Roughead is a 1973 graduate of the United States Naval Academy. Among his six operational commands, Admiral Roughead was the first officer to command both classes of Aegis ships, having commanded USS Barry (DDG 52) and USS Port Royal (CG 73). As a flag officer, he commanded Cruiser Destroyer Group 2, the George Washington Battle Group; and U.S. 2nd Fleet/NATO Striking Fleet Atlantic and Naval Forces North Fleet East. Ashore, he served as Commandant, United States Naval Academy, the Department of the Navy's Chief of Legislative Affairs, and as Deputy Commander, U.S. Pacific Command. Admiral Roughead is one of only two officers to have commanded the fleets in the Pacific and Atlantic, commanding the U.S. Pacific Fleet and Joint Task Force 519, as well as U.S. Fleet Forces Command, where he was responsible for ensuring Navy forces were trained, ready, equipped and prepared to operate around the world, where and when needed. Admiral Roughead became the 29th Chief of Naval Operations Sep. 29, 2007. He and his wife, Ellen, have an adult daughter, Elizabeth.



HONORABLE DANIEL B. PONEMAN, DEPUTY SECRETARY OF ENERGY

Daniel B. Poneman was nominated by President Obama to be Deputy Secretary of Energy on April 20, 2009, and was confirmed by the United States Senate on May 18, 2009. Mr. Poneman also serves as Chief Operating Officer of the Department. Mr. Poneman first joined the Department of Energy in 1989 as a White House Fellow. The next year he joined the National Security Council staff as Director of Defense Policy and Arms Control. From 1993 through 1996, Mr. Poneman served as Special Assistant to the President and Senior Director for Nonproliferation and Export Controls at the National Security Council. After leaving the White House, Mr. Poneman served as a member of the Commission to Assess the Organization of the Federal Government to Combat the Proliferation of Weapons of Mass Destruction and a number of other federal advisory panels. Prior to assuming his responsibilities as Deputy Secretary, Mr. Poneman served as a principal of The Scowcroft Group for eight years, providing strategic advice to corporations on a wide variety of international projects and transactions. Mr. Poneman received A.B. and J.D. degrees with honors from Harvard University and an M.Litt. in Politics from Oxford University. He has published widely on national security issues. Mr. Poneman lives in Virginia with his wife, Susan, and their three children.

FORMER SENATOR JOHN WARNER

During his 30 years in the Senate, John Warner served on the Senate Armed Services Committee, including three periods as Chairman, and was viewed as one of the most influential senators on military and foreign policy issues. Most recently, he was the lead co-sponsor with Senator Joseph Lieberman (I-Conn.) on climate change legislation. The Senator volunteered for two periods of active military duty: the first as an enlisted sailor in the final years of World War II (1945-46), and the second as a Lieutenant in the U.S. Marines during the Korean War (1950-52). After completing his law degree at the University of Virginia School of Law, he clerked for The Honorable E. Barrett Prettyman, U.S. Court of Appeals for the District of Columbia Circuit. From 1955 to 1960, the Senator was an Assistant U.S. Attorney for the District of Columbia. He was appointed, and confirmed by the Senate, as Under Secretary, and later as Secretary, of the U.S. Navy, positions he served in for a total of more than five years during the Vietnam War. He won election to his first of five Senate terms in November 1978. On January 3, 2009, he completed his fifth consecutive term and retired, establishing a record of being the second longest-serving U.S. Senator in the history of the Commonwealth of Virginia.



DR. GEORGE FRIEDMAN, CEO, STRATFOR

George Friedman is the Chief Executive Officer of STRATFOR, a company he founded in 1996 that is now a leader in the field of global intelligence. Dr. Friedman guides STRATFOR's strategic vision and shapes the firm's long-range geopolitical forecasts. Dr. Friedman is also the author of numerous articles and books on international affairs, warfare and intelligence. His most recent book, *The Next 100 Years: A Forecast for the 21st Century*, is a *New York Times* Best Seller. In this book Dr. Friedman draws on an exploration of history and geopolitical patterns dating back hundreds of years to explain where and why future wars will erupt and how they will be fought, which nations will gain and lose economic and political power, and how new technologies and cultural trends will alter the way we will live in the new century. Dr. Friedman received his bachelor's degree from the City College of the City University of New York and holds a Ph.D. in government from Cornell University.



DR. DANIEL YERGIN, CHAIRMAN, IHS CAMBRIDGE ENERGY RESEARCH ASSOCIATES

Daniel Yergin is a highly respected authority on energy, international politics, and economics. Dr. Yergin is a Pulitzer Prize winner and recipient of the United States Energy Award for "lifelong achievements in energy and the promotion of international understanding." He is both a world-recognized author and a business leader, as chairman of Cambridge Energy Research Associates (CERA), one of the world's leading consulting and research firms in its field. He is also executive vice president of IHS, the parent company of CERA. Dr. Yergin received the Pulitzer Prize for his work *The Prize: The Epic Quest for Oil, Money and Power*. Dr. Yergin plays a leadership role in the global energy industry. He chaired the US Department of Energy's Task Force on Strategic Energy Research and Development. He is a member of the Board of the United States Energy Association, and a member of the US National Petroleum Council. He recently served as Vice Chair of the new National Petroleum Council study, *Facing the Hard Truths about Energy*. He also has become the only foreign member of the Russian Academy of Oil and Gas. He is one of the "Wise Men" of the International Gas Union. Dr. Yergin holds a BA from Yale University and a PhD from Cambridge University, where he was a Marshall Scholar.



JACOBS®

JACOBS is one of the country's leading DoD contractors and one of the world's largest engineering and construction firms focusing on energy services, A/E design, engineering, planning, asset management, commissioning and retro-commissioning, operations and maintenance, environmental remediation, program integration, construction management and design/build. For more than 60 years we have supported the DoD and the Intelligence Community with technical competence and expertise across all major military programs worldwide. Our global network includes more than 160 offices in over 20 countries, with over 52,000 employees and exceeding \$11 billion in revenue. We have operations in North America, the United Kingdom, mainland Europe, India, Australia, the Pacific Rim, and Asia.

Founded in 1947, we are a major corporation dedicated to growth and professional excellence through a commitment to quality. Our consistent performance is a result of our commitment to our core values and building long-term client relationships. The combination of a loyal client base and steady growth enables us to attract and retain industry's top talent. In addition to delivering superior value to our DOD and Intelligence community clients, we also serve markets including refining, infrastructure, pharmaceuticals and biotechnology, buildings, food, beverage, forest and consumer products, automotive and industrial, chemicals and basic resources, environmental programs, oil and gas, aerospace and defense, power and utilities and mission critical facilities.

Our energy portfolio can be viewed on the following link: <http://www.jacobs.com/energyportfolio/energyPowerPortfolio.htm>



Despite 65 years of research beginning in World War II, algal biofuels have been stymied by the "Dirty Dozen." These challenges include nutrients costs, pumping, harvesting, etc. Algae's energy balance has been negative because an acre of algae may contain 200,000 Kwh of energy but require 300,000 Kwh to pump and process it.

Nor does that include the cost of growing the algae, which requires 5x the phosphorus fertilizer of terrestrial crops to fix the same amount of carbon. Phosphate shortages may prove to be the biggest handicap for algal biofuels because the U.S. has an estimated 30 years of phosphorus reserves left. Food crops cannot be grown without phosphorus and the U.S. already imports 10% of annual consumption from Morocco.

Thus the coming phosphorus shortage poses a real threat to U.S. agriculture and could limit biofuels as well.

LiveFuels was founded in 2006 as a "mini-Manhattan Project" to solve these problems. Our vision was an alliance of scientists, and we began by working with Sandia and NREL.

Four years later, LiveFuels is commercializing truly sustainable aquaculture. We use bio-mimicry to enhance algae production in marine ecosystems. Our process grows algae together with fish, which can be converted to fish oil and used as biocrude.

LiveFuels cultivates native algal species in saltwater and uses planktivorous fish such as clupeids – fatty fish which are members of the herring family – to eat the algae. Clupeids have never been grown commercially but can filter algae as small as 6 microns. This eliminates the need for expensive harvesting techniques like membrane filtration and centrifuges. Also, clupeids consume algae predators – rotifers, copepods, mysids, tintinnids – which can decimate algae crops in a matter of hours and require pumping or pesticides for eradication.

LiveFuels' approach capitalizes on naturally occurring trace minerals, carbon dioxide and agricultural runoff which would otherwise cause hypoxic areas in marine waters ("dead zones"). This method assimilates phosphorus from seawater and can be deployed in or near marine areas. And because the U.S. controls the largest EEZ on earth, the U.S. has the potential to replace all imported petroleum by using LiveFuels' process.

NDIA WOULD LIKE TO THANK OUR
PROMOTIONAL PARTNERS!

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