

Energy Security as a GRAND STRATEGY

May 7-8, 2012 - National Defense University – Washington D.C.

ENERGY SECURITY IS A WICKED PROBLEM:

- ▶ Difficult to clearly define
- ▶ Socially complex with multiple stakeholders
- ▶ Highly unstable and interdependent
- ▶ Resistant to traditional scientific/rational planning

Join premier strategic thought leaders as they examine energy security as a wicked problem comprised of an interdependent system of systems.

Learn from a distinguished group of panelists as they discuss the key roles of government, industry, and science and technology in addressing energy security issues.

Engage with workshop participants in developing recommendations for solid next steps towards a U.S. Energy Grand Strategy.

KEYNOTE SPEAKERS

Senator Byron Dorgan

Senior Policy Advisor, Arent Fox, and former U.S. Senator from North Dakota

Daniel Poneman

Deputy Secretary of Energy

Steven Koonin

Director of the New York University Center for Urban Science and Progress (CUSP), Former Under Secretary for Science, U.S. Department of Energy

R. James Woolsey

Chairman, Foundation for the Defense of Democracies; Venture Partner, Lux Capital Management; Director of Central Intelligence (1993-95)



THE UNIVERSITY OF CHICAGO



http://www.anl.gov/eesa/energy_security_conference

National Defense University | Fort Lesley J. McNair | 300 5th Avenue SW, Marshall Hall | Washington, DC 20319-5066

Presented by: The National Defense University | Argonne National Laboratory | Securing America's Future Energy | Energy Policy Institute at Chicago

Energy Security as a Grand Strategy

Fort Lesley J. McNair, Washington, D.C. 20319 | May 7-8, 2012

Monday, May 7, 2012

- 0730-0830** **Registration and Continental Breakfast**
- 0830-0900** **Conference Welcome and Overview**
(Argonne National Laboratory/National Defense University)
- 0900-0930** **Keynote**
Daniel Poneman, *Deputy Secretary, Department of Energy*
- 0930-1000** **Break and Breakout Group Sign-up**
- 1000-1145** **Panel: The Energy Security System as a Wicked Problem**
Lin Wells (chair), *Director for the Center for Technology and National Security Policy (CTNSP), National Defense University*
Panel Members:
Robert Rosner, *Director of the Energy Policy Institute at Chicago, Harris School of Public Policy Studies, University of Chicago*
Charles K. Ebinger, *Director, Energy Security Initiative, Senior Fellow, Foreign Policy, Brookings Institution*
Brigadier General (Ret.) Steven Anderson, *Senior Vice President of Relyant, LLC*
- 1145-1200** **Lunch Setup**
- 1200-1300** **Lunch Keynote**
Honorable Dr. Steven E. Koonin, *Director of the New York University Center for Urban Science and Progress (CUSP), Former Under Secretary for Science, U. S. Department of Energy*
- 1300-1315** **Break**

1315-1445

Panel: Who Plays What Role in the Energy Security System?

Sheila Ronis, *Grand Strategy Conference Chair, NDU; Director MBA, Walsh College*

Panel Members:

Sharon Burke, *Assistant Secretary of Defense for Operational Energy Plans and Programs*

Patricia Hoffman, *Assistant Secretary for the Office of Electricity Delivery and Energy Reliability (OE), U.S. Department of Energy*

Jason Miller, *Special Assistant to the President for Manufacturing Policy, National Economic Council*

Jim Caverly, *Senior Policy Advisor in the Office of Infrastructure Protection (IP), National Protection and Programs Directorate (NPPD), Department of Homeland Security*

1445-1500

Break

1500-1615

Panel: Science and Technology's Role in Supporting Systems Approaches to Energy Security

Pamela Sydelko (chair), *Deputy Associate Laboratory Director, Energy Engineering and Systems Analysis, Argonne National Laboratory*

Panel Members:

Charles Macal, *Director of the Complex Adaptive Systems Group, Argonne National Laboratory*

Alenka Brown-VanHoozer, *Assistant Chair, Energy & Environmental Security Policy, National Defense University*

Juan Torres, *Senior Manager of the Renewable Energy Technologies Group, Sandia National Laboratory*

1615-1630

Break

1630-1700

The U.S. Energy Grand Strategy: A Scenario

Sheila Ronis, *Grand Strategy Conference Chair, NDU; Director MBA, Walsh College*

1700-1800

Panel: Industry as a Key Component of the Energy Security System

Sam Ori (chair), *Directory of Policy, Securing America's Future Energy*

Panel Members:

Mark Finley, *General Manager, Global Energy Markets, BP*

James L. Connaughton, *Executive Vice President and Senior Policy Advisor, Exelon*

Taylor Shinn, *Senior Director of Corporate Development, Chesapeake Energy*

1800-2000

Dinner Keynote

Former U.S. Senator Byron Dorgan (D-ND), *Senior Policy Advisor, Arent Fox*

Tuesday, May 8, 2012

- 0730-0830** **Continental Breakfast and Late Registration**
- 0830-0930** **Keynote**
James Woolsey, Chairman, Foundation for the Defense of Democracies; Venture Partner, Lux Capital Management; Director of Central Intelligence (1993-95)
- 0930-0945** **Break**
- 0945-1130** **Discussion Group Breakout: Steps Toward an Energy Security Grand Strategy**
Sheila Ronis, Grand Strategy Conference Chair, NDU; Director MBA, Walsh College
- 1130-1230** **Lunch**
- 1230-1500** **Discussion Group Recommendations: Report out**



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BG (Ret) Steven Anderson

Steven M. Anderson assumed duties as the Chief Marketing Officer for Relyant LLC, a Service-Disabled Veteran Owned Small Business (SDVOSB), on 15 Jan 11, after serving 13 months as the Chief Operating Officer for Synovision Solutions LLC. In his new position with Relyant, Anderson will establish an office in the Washington DC area and focus on commercial and government business development in order to leverage Relyant's profound and proven capabilities delivering products and services in support of construction, energy, logistics, environmental remediation, maintenance, demining, information and security operations all over the world. Anderson, a career military officer who retired from active duty in November 2009, served for five years as a general officer in the US Army, including 15 months as the senior US and coalition logistician in Iraq in support of Operation Iraqi Freedom. As the Multi-National Forces Iraq C4, he was the first senior leader to recognize the importance of reducing risks to soldiers and cutting costs thru energy demand reduction and directed the Army's Rapid Equipping Force to use spray foam insulation in Iraq, an effort that since 2007 has significantly reduced energy requirements in Iraq, Kuwait, Afghanistan, and Djibouti. The spray foam initiative has stimulated over \$3B in energy cost avoidance for our military and taken over 30,000 fuel trucks off the most dangerous roads in the world, thereby reducing risks to our troops. Additionally, he coordinated with the governments of Jordan and Turkey for increased logistical support, developed and cleared wreckage at the Iraqi port of Um Qasr, brought commercial airlift support to Al Asad, and reestablished the Um Qasr-to-Baghdad rail operation. He was responsible for the development and execution of two key Iraqi business development/employment initiatives: the Iraqi Trucking Network (ITN) and the Iraqi-Based Industrial Zone (I-BIZ), both of which now employ many thousands of Iraqis and was recently named to the board of directors of the American Turkish Council. From 2004-2006, Anderson served as the senior US logistician in Korea (Deputy C-4 for the United Nations Command/Combined Forces Command and J4, United States Forces Korea) and spearheaded the development of Camp Humphreys, the new combined and US headquarters facility in central Korea. He served in various command positions including Commander, Division Support Command, 2nd Infantry Division, Korea (2000-02), and Commander, 725th Main Support Battalion, 25th Infantry Division (Light), Schofield Barracks, Hawaii (1995-97). In his final military assignment, he served for two years on the Army Staff in the Pentagon as the Director, Logistics Operations and Readiness, Army G4 (Logistics), working key operational logistics issues in support of warfighters. As a complement to his duties with Relyant, Anderson also serves on the board of directors of several companies in what he categorizes as the emerging field of "energistics" – the art and science associated with leveraging enhancements in energy reduction, production, storage and management to cut logistics requirements and costs associated with complex and demanding operations: Ultralife Corporation, a \$250M/year battery manufacturer (Rochester, NY); Marine Power Products, a low-energy hydrogen fuel developer (Richmond, CA); Greener Building Solutions, an energy efficient



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expeditionary housing manufacturer (Fairfax, VA); Applied Training Solutions LLC, a start-up simulations software company (Oakton, VA); and HVAC Manufacturing, an energy efficient zone control unit manufacturer (San Jose, CA). He also serves on the board of directors for two non-profits: the American Turkish Council and PATHS, a charitable organization intent on building schools for disabled children in Iraq. Anderson has spoken publicly on logistics and energy issues in various forums, and his papers have been published by the Institute of Land Warfare (Association of the US Army), the Armed Forces Journal, Army Logistician, and others. His Op-Ed piece, “Save Lives, Save Energy” appeared in the New York Times on 12 Jan 11. In July 10 he appeared for a week on a national television campaign for a national Clean Energy climate plan for VoteVets.Org. Over the past year he has continued to make numerous radio and television appearances on venues such as National Public Radio, BBC, Washington’s local CBS affiliate, as well as public appearances for the National Science Foundation, the Pacific Northwest Defense Coalition, VoteVets, Environmental Entrepreneurs, the National Resources Defense Council, Earth: The Operators Manual, and other energy and/or environmental organizations. A 1978 graduate of the US Military Academy at West Point, Anderson earned a Bachelor of Science degree with a concentration in Mechanical Engineering. In 1987 he earned a Master of Science in Operations Analysis Engineering at the Naval Post Graduate School, Monterey, California. He is a graduate of the Army War College (1998) and a distinguished graduate of the Marine Corp Command and Staff College (1991). Anderson is married to the former Anne L. RisCassi and they reside in Arlington, Virginia. They have two children: Cassi, an elementary school teacher in Springfield, Virginia, and Drake, a sophomore at the Virginia Commonwealth University in Richmond, VA.

Dr. Hans Binnendijk

Dr. Hans Binnendijk is currently the Vice President for Research of the National Defense University and the Theodore Roosevelt Chair in National Security Policy. He is also Director of the Institute for National Strategic Studies (INSS), and the Founding Director of the Center for Technology and National Security Policy at NDU. He previously served on the National Security Council as Special Assistant to the President and Senior Director for Defense Policy and Arms Control (1999-2001). From 1994 to 1999, Dr. Binnendijk was Director of the Institute for National Strategic Studies at the National Defense University. Prior to that, he was Principal Deputy Director and Acting Director of the State Department's Policy Planning Staff (1993-1994). He also served as Deputy Staff Director and Legislative Director of the Senate Foreign Relations Committee (1980-1985). He has received numerous awards for his government service, including two Distinguished Public Service Awards and a Superior Service Award. In academia, Dr. Binnendijk was Director of the Institute for the Study of Diplomacy at Georgetown University, where he was also the Marshall B. Coyne Research Professor at the Edmund A. Walsh School of Foreign Service (1991-1993). He was Deputy Director and Director of Studies at London's International



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Institute for Strategic Studies and Editor of *Survival* from 1988-1991. He is author or co-author of more than 100 articles, editorials and reports. His most recent book is *Seeing the Elephant: The U.S. Role in Global Security* (Potomac Books: 2006). Dr. Binnendijk serves on the Board of Overseers of the Fletcher School of Law and Diplomacy, on the Studies Committee of the Council on Foreign Relations, and as Vice Chairman of the Board of Humanity in Action. He previously served on the US Committee of the International Institute for Strategic Studies and the CSIS International Research Council. He has received the Cross of the Order of Merit from the Federal Republic of Germany. Dr. Binnendijk is a 1968 graduate of the University of Pennsylvania. He received his M.A.L.D. and his Ph.D. in international relations from the Fletcher School of Law and Diplomacy, Tufts University.

Dr. Alenka Brown

Dr. Alenka Brown-VanHoozer, SES, is a Senior Research Fellow with the Center for Technology and National Security Policy (CTNSP) and Assistant Chair of the Energy & Environmental Security Policy (EESP) program at INSS where she bridges energy efforts between EESP and CTNSP. She is also a (IPA) Senior Research Fellow for the Center for Technology and National Security Policy (CTNSP). In her current role, she reports to the CTNSP Chair for Force Transformation as Lead for Human Interoperability Enterprise, Social Networking Communications, and Information Propagation and Stability Operations. She supports the Office of the Assistant Secretary of Defense, Networks & Information Integration/ Department of Defense Chief Information Officer, the Defense Threat Reduction Agency-Innovation and Systems Engineering Directorate, and Intelligence Community as Special Advisor for Human Interactions involving Human Interoperability and Building Partnerships and Capacities, Threat Assimilation, and Human System Integration and Asymmetric Psycho-Metrics. She holds the position of Director of Human System Development in the National Security Directorate at the Department of Energy-Oak Ridge National Laboratory. Before assuming her current position, Dr. Brown was an IPA-Sr. Science/Special Advisor, Federal Advisor, or a FFRDC Advisor/Consultant for such offices, agencies, centers, or boards as the Joint Staff-J9; the Special Assistant for Concepts and Plans & Strategic and Tactical Systems under the Undersecretary for Defense for Advanced Technology and Logistics; the Office of Assistant Secretary of Defense for Special Operations/Low Intensity Conflicts; the Office of the Assistant Secretary of Defense, Networks & Information Integration; the Defense Threat Reduction Agency-Advanced Strategic and Concept Office; the USSTRATCOM Global Innovative Strategic Center; the National Security Council Office for Strategic Communications; the DIA-Underground Facility Analysis Center, the National Aeronautics and Space Administration Langley-Human Factors Division; the Intelligence Community for Asymmetric Threats; the Defense Science Board, and the Department of Energy's Plutonium Focus Area Task Force. Dr. Brown's field of knowledge and publication topics range from human interoperability dynamics for sharing of information and behaviors involving: human system integration,



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maritime domain awareness, building partnership capacities, and humanitarian and disaster efforts to traditional human factors; virtual environments; instrumentation, command and controls; neuro-linguistics and human programming; adaptive learning; adaptive human networks; cognitive-behavior and cross cultural analysis; psycho-metric forensics; asymmetric threats and irregular warfare; cognitive-behavior and cyber threats; information operation and underground facilities; and critical infrastructure vulnerabilities and human network attack. She is the author of the book "Say it Right", and co-author of chapters of the books, "The Future of Foreign Language Education in the United States: The Entangled Future of Foreign Language Learning" (Chapter 2), and the "IEEE for High Assurance Systems: Human Interoperability and High Assurance Systems" (Chapter 5). Dr. Brown earned a Ph.D. in Human Factors Engineering (emphasis in Cognitive Engineering); M.S. in Electrical Engineering, and a B.S. in Computer Science. She is a Certified Human Factors Professional and is considered one of the foremost experts in cross-cultural communications.

Ms. Sharon Burke

Sharon E. Burke was sworn in as the Assistant Secretary of Defense for Operational Energy Plans and Programs on June 25, 2010. As the Assistant Secretary, Ms. Burke is the principal advisor to the Secretary and Deputy Secretary of Defense on operational energy security and reports to the Under Secretary of Defense for Acquisition, Technology, and Logistics. She is the inaugural Assistant Secretary for the office, which was created to strengthen the energy security of U.S. military operations. The mission of the office is to help the military services and combatant commands improve military capabilities, cut costs, and lower operational and strategic risk through better energy accounting, planning, management, and innovation. Operational energy, or the energy required to train, move, and sustain forces, weapons, and equipment for military operations, accounted for 75 percent of all energy used by the Department of Defense in 2009. Prior to her appointment at the Department of Defense, Ms. Burke was a Vice President and Senior Fellow at the non-partisan and independent Center for a New American Security (CNAS), a defense policy think tank. At CNAS, Ms. Burke directed research on energy security and initiated the Natural Security Program, which looked at the national security implications of global natural resources challenges. Ms. Burke has extensive previous U.S. government service. She served as a member of the Policy Planning Staff at the Department of State, a Country Director in the Department of Defense's Office of Near Eastern and South Asian Affairs, and a speechwriter to Deputy Secretary of State Richard Armitage and Secretary of Defense William Cohen. She started her career in the Energy and Materials program of the U.S. Office of Technology Assessment, contributing to a multi-year study of energy in developing countries. First joining the Department of Defense as a Presidential Management Fellow, Ms. Burke has received medals for Exceptional Public Service from the Department of Defense and the Superior Honor Award from the Department of State. She has served on the Leadership Team of the American Assembly's Next Generation Project, as the Director of the National



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Security Project at Third Way, as the Middle East Advocacy Director at Amnesty International USA, and is the author of numerous reports, including A Strategy for American Power: Energy, Climate, and National Security. Ms. Burke graduated from Williams College and Columbia University's School of International and Public Affairs, where she focused on international energy policy and earned a Certificate of Middle Eastern Studies. At Columbia, she also was a Zuckerman Fellow, an International Fellow, and a recipient of a Foreign Language and Areas Studies grant for Arabic.

Mr. James Caverly

Jim Caverly is the Director of the Partnership and Outreach Division (POD) within the Office of Infrastructure Protection of the Department of Homeland Security (DHS). POD develops and sustains viable strategic relationships and information sharing systems and processes with the owners and operators of the nation's critical infrastructures and key resources that support program execution across the spectrum of preparedness, prevention, protection, response, and recovery activities. Additionally, POD provides coordination and management of the NIPP process and its supporting Site Specific Plans (SSPs), as well as the National Annual CI/KR Report, which tracks progress of NIPP and SSP implementation, including performance metrics. Mr. Caverly joined DHS at its inception, having previously worked for the Department of Energy (DOE) and its predecessor agencies for over 25 years. During his tenure at the DOE, Mr. Caverly was involved in a broad range of energy-related issues, including energy emergency planning, critical infrastructure protection, international energy security, domestic energy supply, nuclear safeguards and security, and national security policy and planning. Mr. Caverly is a graduate of the University of Notre Dame and the Naval War College, and served for three years on the faculty of the Industrial College of the Armed Forces at the National Defense University.

The Honorable James Connaughton

James L. Connaughton joined Exelon Corporation as Executive Vice President and Senior Policy Advisor in March 2012. In this role, Mr. Connaughton serves on the company's Executive Committee. His principal areas of focus include major public policy priorities, competitive markets advocacy, public sector business development, technology innovation initiatives, and corporate sustainability. Prior to joining Exelon, Mr. Connaughton was Executive Vice President, Corporate Affairs, Public and Environmental Policy, Constellation Energy, from February 2009 until March 2012. Prior to that, Mr. Connaughton was Chairman, White House Council on Environmental Quality from 2001-2009, where he served on President Bush's senior staff as senior environment, energy and natural resources advisor, and as Director of the White House Office of Environmental Policy. During his service with the federal government, Connaughton worked closely with the president, his Cabinet and the Congress to develop and implement energy security, air pollution and climate change policies. This work led to a series of new market-based



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programs, incentives, technology initiatives and public-private partnerships that included bipartisan energy legislation in 2005 and 2007, nearly \$90 billion for clean energy technology research and incentives to accelerate commercial deployment of advanced technologies such as plug-in hybrid vehicles, renewable fuels, nuclear, solar, wind, and carbon capture and storage from coal power generation. Internationally, Connaughton helped establish a broad series of technology initiatives, the public-private Asia Pacific Partnership on Clean Development and Climate Change, and the Major Economies Leaders Meetings on Energy and Climate, in which Connaughton served as the president's personal representative. Connaughton also played a leading role in other major initiatives including acceleration and significant expansion of energy and infrastructure projects, cleanup and redevelopment of potentially tens of thousands of abandoned industrial "brownfield" sites, improved management of public forests, conservation partnerships with farmers, millions of acres of wetlands protection and restoration, new national air quality standards, major reductions in air pollution from power plants and diesel vehicles, international environmental cooperation agreements, environmental management and performance of federal government operations, and the establishment of some of the world's largest and most ecologically diverse marine conservation areas. Prior to his public service, Connaughton was a partner in the environmental practice group at the law firm Sidley Austin, where he played a leading role in the development and implementation of the ISO 14000 series of international environmental management and performance standards. Connaughton is a member of the Board of Governors of the Argonne National Laboratory. He is also on the Board of Directors of the National Aquarium Institute and a Trustee of the National Marine Sanctuary Foundation. Connaughton graduated second in his class, magna cum laude, Order of the Coif, from the Northwestern University School of Law and received a bachelor's degree from Yale University.

Senator Byron Dorgan

U.S. Senator Byron L. Dorgan served as a Congressman and Senator for North Dakota for 30 years before retiring from the U.S. Senate in 2011. He served in the Senate Leadership for 16 years, first as Assistant Democratic Floor Leader and then as Chairman of the Democratic Policy Committee. Senator Dorgan was widely seen as a major leader on energy issues in the United States Senate. In addition to serving as chairman of the Energy and Water Appropriations Subcommittee that funded all of the federal energy projects in the U.S., he was a senior member of the Energy Committee and Chairman of the Energy and Power Subcommittee. He served as a Congressman and Senator for North Dakota for 30 years before retiring from the U.S. Senate in 2011. Senator Dorgan is now active in his post Senate life teaching, speaking, consulting, investing and much more. He is a recognized leader in the fields of energy policy, economic issues, aviation policy, Indian issues, trade policy, health care and more. He is considered a compelling public speaker and one of the best debaters in the U.S. Senate. Senator Dorgan is a Visiting Professor at two Universities



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lecturing on energy, economic policy and political affairs. He works part time as a Senior Policy Advisor with the Washington DC Law Firm Arent Fox. He is also affiliated with the Bipartisan Policy Center, a Washington DC think tank working on energy issues. And he is Chairing a new program at the Aspen Institute focusing on Native American Children with an emphasis on teen suicide prevention. The Senator is the author of two books. The first, a New York Times Bestseller book “Take this Job and Ship It,” and a second book released in 2009, “Reckless... How Debt, Deregulation and Dark Money Nearly Bankrupted America (And How We Can Fix It).” And he has a contract to write two more books with the first due to be published in early 2012. Senator Dorgan is represented by Leading Authorities, a Washington DC speakers and lecture bureau that represents public figures available for speaking opportunities.

Dr. Charles Ebinger

Charles Ebinger has more than 35 years of experience specializing in international and domestic energy markets (oil, gas, coal and nuclear) and the geopolitics of energy, with a particular focus on the Middle East, South Asia, Africa., the Arctic and Antarctic. Ebinger has served as an energy policy advisor to over 50 governments on restructuring their state-owned energy sectors, privatization and the creation of regulatory regimes. He is an adjunct professor of electricity economics at Johns Hopkins Nitze School and is one of the Nuclear Energy Institute’s “Nuclear Energy Experts.”

Mr. Mark Finley

Mark Finley is General Manager, Global Energy Markets and US Economics at BP. In addition to analyzing the economics and politics of the world oil market, he has produced market assessments for natural gas, electricity and carbon coal. He also manages the annual production of the BP Statistical Review of World Energy (now in its 60th year). He regularly presents BP's views on global energy markets to external audiences. Mr. Finley is Chairman of the US Conference of Business Economists and is a Vice President of the International Association of Energy Economics. Mr. Finley has 25 years of private- and public-sector experience as an energy economist. He joined BP's Economics Team in 2001 and has worked in Washington DC and London. He is a Phi Beta Kappa graduate of the University of Michigan (Economics), and holds graduate degrees from Northwestern University (Economics) and the George Washington University (Finance). He and his wife Leigh Ann live in Arlington, VA with their two beautiful daughters.

Dr. Steven Koonin

Dr. Steven E. Koonin served as the U.S. Department of Energy’s second Senate-confirmed Under Secretary for Science from May 19, 2009 through November 18, 2011. As Under Secretary for Science, Koonin functioned as the Department’s chief scientific officer,



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coordinating and overseeing research across the DOE. He led the preparation of the Department's 2011 Strategic Plan and was the principle author of its recently released Quadrennial Technology Review. Koonin particularly championed research programs in High Performance Simulation, Exascale Computing, Inertial Fusion Energy, and Greenhouse Gas Monitoring, Reporting, and Verification. He also provided technical counsel on diverse nuclear security matters. Dr. Koonin brought to the post a distinguished career as a university professor and administrator, as well as experience in industry. He joined the Caltech faculty in 1975, was a research fellow at the Neils Bohr Institute during 1976 - 1977, and was an Alfred P. Sloan Foundation Fellow during 1977 - 1979. He became a professor of theoretical physics at Caltech in 1981 and served as Chairman of the Faculty from 1989 - 1991. Dr. Koonin was the seventh provost of Caltech (from 1995 - 2004). In that capacity, he was involved in identifying and recruiting 1/3 of the Institute's professorial faculty and left an enduring legacy of academic and research initiatives in the biological, physical, earth, and social sciences, as well as the planning and development of the Thirty-Meter Telescope project. As the Chief Scientist at BP between 2004 and early 2009, Dr. Koonin developed the long-range technology strategy for alternative and renewable energy sources. He managed the firm's university-based research programs and played a central role in establishing the Energy Biosciences Institute at the University of California Berkeley, the Lawrence Berkeley National Laboratory, and the University of Illinois at Urbana-Champaign. Dr. Koonin was a member and past chair of the JASON Study Group, advising the U.S. Government on technical matters of national security. He has served on numerous advisory committees for the Department of Energy, the National Science Foundation, and the Department of Defense, including the Defense Science Board and the CNO's Executive Panel. He is a member of the Council on Foreign Relations and a fellow of the American Physical Society, the American Association for the Advancement of Science, and the American Academy of Arts and Sciences, and a former member of the Trilateral Commission. In 1985, Dr. Koonin received the Humboldt Senior U.S. Scientist Award and, in 1998 the Department of Energy's E. O. Lawrence Award for " his broad impact on nuclear many-body physics, on astrophysics, and on a variety of related fields where sophisticated numerical methods are essential; and in particular, for his breakthrough in nuclear shell model calculations centered on an ingenious method for dealing with the huge matrices of heavy nuclei by using path integral methods combined with the Monte Carlo technique." He was elected to membership in the US National Academy of Sciences in 2010. Dr. Koonin's research interests have included nuclear astrophysics; theoretical nuclear, computational, and many-body physics; and global environmental science. He has been involved in scientific computing throughout his career and is a strong advocate for research into renewable energies and alternate fuel sources. His academic research in computational and nuclear physics has impacted the direction of science both nationally and internationally. He has supervised more than 25 PhD students, produced more than 200 peer-reviewed research publications, and authored or edited 3 books, including a pioneering textbook on



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Computational Physics in 1985. Born in Brooklyn, New York, Dr. Koonin received his B.S. in Physics from Caltech in 1972, worked as a summer graduate student at Los Alamos from 1972-1975 and received his Ph.D. in Theoretical Physics from the Massachusetts Institute of Technology (MIT) in 1975. Dr. Koonin married his wife, Laurie, in 1975. They have three grown children, Anna, Alyson, and Benjamin. Dr. Koonin currently works at the Institute for Defense Analyses in Washington D.C., and will take up an academic position in 2012.

Dr. Charles Macal

Charles Macal is Senior Systems Engineer and Director of the Complex Adaptive Systems Group at Argonne National Laboratory. He applies computational modeling and simulation tools to complex systems in a variety of fields, including energy, national security and defense. Currently he is working in the area of applying computational models to understand global energy markets and implications for long-term U.S. energy security. He is the former co-director of the Joint Threat Anticipation Center (JTAC), a joint venture of Argonne National Laboratory and the University of Chicago devoted to advancing the state-of-the-art in anticipating long-term international threats to U.S. national security. He has been a principal investigator for the development of the widely used Repast Symphony agent-based modeling toolkit. Dr. Macal serves on the editorial boards of the ACM Transactions on Modeling and Simulation and the journal Simulation, and he has co-authored a book, *Managing Business Complexity: Discovering Strategic Solutions with Agent-Based Modeling and Simulation*, published in 2007 by Oxford Press. He is Adjunct Professor at The University of Chicago, where he teaches a course on Complex Adaptive Systems for Threat Management and Emergency Preparedness. Dr. Macal received a Ph.D. in Industrial Engineering & Management Sciences from Northwestern University and holds an M.S. in Industrial Engineering and a B.S. in Engineering Sciences from Purdue University. He is a registered professional engineer in the State of Illinois and is a member of the Military Operations Research Society (MORS), the Institute for Operations Research and the Management Sciences (INFORMS), the Association for Computing Machinery (ACM), and several other professional computational modeling organizations.

Mr. Jason Miller

Mr. Miller is the Special Assistant to the President for Manufacturing Policy, working within the National Economic Council in the White House to lead the Administration's efforts to coordinate policy and federal activities supporting U.S. manufacturing. He joined the Obama Administration in April 2010. Prior to joining the Administration, Mr. Miller advised global companies as a management consultant with The Boston Consulting Group in San Francisco. He worked with senior executives in the energy and technology manufacturing sectors on strategic, operational, and organizational issues. Earlier in his career, Mr. Miller was at Marakon Associates, a boutique consulting firm, where he



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provided business advice on corporate finance and strategic issues in manufacturing, healthcare, and energy companies. Mr. Miller originally hails from Chicago, Illinois. He received a B.A. from the University of Pennsylvania, a M.B.A. from the Kellogg School of Management at Northwestern University, and a M.P.A. from Harvard's Kennedy School of Government.

Mr. Sam Ori

Sam Ori is the Director of Policy for Securing America's Future Energy (SAFE) and the Electrification Coalition and a principal author of the Electrification Roadmap. His primary areas of coverage include global oil market dynamics and U.S. policy concerning domestic production of oil and natural gas. Additional areas of policy responsibility include transportation fuel economy and electrification of transportation. Mr. Ori was responsible for SAFE's signature oil crisis simulation, Oil ShockWave. Prior to joining SAFE, Mr. Ori spent three years in government. As a Presidential Management Fellow with the Broadcasting Board of Governors, he was responsible for oversight of three government-funded international broadcasting organizations that provided a range of multimedia services to developing countries around the world. In 2005, he spent six months working as an economics officer in the U.S. embassy in New Delhi, India. Mr. Ori received his Bachelor of Arts in Political Science from the Ohio State University in 2000 and his Master of Public Policy from the University of Chicago in 2003.

Mr. Daniel Poneman

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. Under the leadership of Secretary of Energy Steven Chu, 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. His responsibilities included the development and implementation of U.S. policy in such areas as peaceful nuclear cooperation, missile technology, space-launch activities, sanctions determinations, chemical and biological arms control efforts, and conventional arms transfer policy. During this time, he also participated in negotiations and consultations with governments in Africa, Asia, Europe, Latin America, and the former Soviet Union. 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.



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Between tours of government service he practiced law for nine years in Washington, D.C. - first as an associate at Covington & Burling, later as a partner at Hogan & Hartson - assisting clients in regulatory, policy and transactional matters, international arbitration, commercial real estate financing, export controls, and sanctions and trade policy. 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 and is the author of *Nuclear Power in the Developing World and Argentina: Democracy on Trial*. His third book, *Going Critical: The First North Korean Nuclear Crisis* (coauthored with Joel Wit and Robert Gallucci), received the 2005 Douglas Dillon Award for Distinguished Writing on American Diplomacy. Mr. Poneman is a member of the Council of Foreign Relations. Mr. Poneman lives in Virginia with his wife, Susan, and their three children.

Dr. Sheila Ronis

Dr. Sheila R. Ronis is Director of the MBA/MM Programs at Walsh College and Professor of Management. She is also President of The University Group, Inc., a management consulting firm, and think tank specializing in strategic management, visioning, national security and public policy. She teaches the “Strategic Management Capstone” course of the MBA, “Issues of Globalization” and “Strategic Management and Leadership” in the Doctorate of Management program at Walsh College. She is a Senior Advisor to Ambassador David Abshire, at the Washington based Center for the Study of the Presidency and Congress. Her B.S. is in Physics and Mathematics. Her M.A. and Ph.D. are from The Ohio State University in Large Social System Behavior. Dr. Ronis is the former chair of the Vision Working Group of the Project on National Security Reform (PNSR) in Washington, D.C., which was tasked by Congress to rewrite the National Security Act of 1947. As a Distinguished Fellow at PNSR, Dr. Ronis was responsible for the plan and processes to develop The Center for Strategic Analysis and Assessment; the place where the President of the United States will conduct “grand strategy” on behalf of the nation. On 30 July, 2010, she chaired a conference at the Center for Strategic and International Studies, CSIS, that presented the findings of the PNSR Vision Working Group Report and Scenarios which she edited, that outlines why foresight capabilities are essential to the workings of the Executive Office of the President of the United States. She was awarded a Fulbright Specialist Scholarship and studied these issues in Singapore in August and October 2011. On 8-9 November 2011, Dr. Ronis chaired a symposium at the National Defense University, Institute for National Strategic Studies, *Forging an American Grand Strategy: Securing a Path Through a Complex Future*, in Washington, D.C. A publication based on that conference, edited by Dr. Ronis will be published in 2013. On 24-25 August 2010, Dr. Ronis chaired the conference: *Economic Security: Neglected Dimension of National Security* at the National Defense University that explored a “grand strategy” for a healthy U.S. economy. A publication based on that conference, edited by Dr. Ronis was published



SPEAKER BIOGRAPHIES



December 2011. In March 2006, she completed a study of the national security implications of the erosion of the U.S. industrial base for the U.S. House of Representatives Committee on Small Business. Her book, *Timelines into the Future: Strategic Visioning Methods for Government, Industry and Other Organizations*, was published by Hamilton Books in June, 2007. Other significant papers include, “Transformational Recapitalization: Rethinking USAF Aircraft Procurement Philosophies” which was published in *Defense AT&L* in November 2004 and “Erosion of the Industrial Base and its Issues of National Security: A Systems Approach to Congressional Action” presented at the National Defense Industrial Association conference in November 2005.

Dr. Robert Rosner

Robert Rosner is a theoretical physicist, with primary interests in fluid dynamics and plasma physics, especially in areas that bridge laboratory science with astrophysics. He is on the faculty of the University of Chicago (since 1987), where he is the William E. Wrather Distinguished Service Professor in the departments of Astronomy & Astrophysics and Physics at the University of Chicago, as well as in the Enrico Fermi Institute and the Harris School of Public Policy Studies. He served as Argonne National Laboratory’s Chief Scientist and Associate Laboratory Director for Physical, Biological and Computational Sciences (2002-05), and was Argonne’s Laboratory Director from 2005-09; he was the founding chair of the DOE National Laboratory Directors’ Council (2007-09). His degrees are all in physics (BA, Brandeis University; PhD, Harvard University). He was elected to the American Academy of Arts and Sciences in 2001, and to the Norwegian Academy of Science and Letters (as a Foreign Member) in 2004; he was also elected Fellow of the American Physical Society. Most of his scientific work has been related to astrophysical and laboratory fluid dynamics and plasma physics problems, as well as in applied mathematics and computational physics. His current research work is focused on turbulent mixing in nonlinear Rayleigh-Taylor, Kelvin-Helmholtz, and other interface mixing flows and transient MHD processes, including magnetic reconnection; and modeling and simulations of advanced nuclear reactors. More generally, he is involved in the development of modern high-performance computer simulation tools, with a particular interest in complex systems. Within the past few years, he has been increasingly involved in energy technologies, and in the public policy issues that relate to the development and deployment of various energy technologies; he is the founding director of the Energy Policy Institute at Chicago (EPIC), located at the Harris School of Public Policy Studies and Booth School of Business of the Univ. of Chicago.

Mr. Taylor Shinn

Taylor N. Shinn is the Senior Director of Corporate Development for, Chesapeake Energy, the nation’s most active explorer and second largest producer of natural gas. An employee of Chesapeake Energy since 2005, Taylor manages national affairs and market development



SPEAKER BIOGRAPHIES



initiatives. Taylor is a member of several state and national energy associations including America's Natural Gas Alliance, American Gas Association, NGV America, Oklahoma Energy Explorers, and Oklahoma Independent Producers Association. Taylor received his bachelor's degree from Oklahoma State University's Spears School of Business and his master's degree from Oklahoma Christian University's School of Business Administration. Taylor remains active in the community and serves on several community boards and organizations.

Ms. Pamela Sydelko

Pamela Sydelko is the Deputy Associate Laboratory Director for Energy Engineering & Systems Analysis. Her role within the Energy Engineering & Systems Analysis Directorate is to assist in strategic planning, research coordination, and program development. She supports development of initiatives and encourages innovations that lead to new research opportunities across basic and applied sciences and engineering programs. Ms. Sydelko earned her MBA from the University of Chicago and her M.S. degree in soil science from the University of Illinois at Urbana-Champaign. She joined Argonne in October 1989, coming from the U.S. Army Engineering Research and Development Center – Construction Engineering Research Laboratory (CERL) in Champaign-Urbana. Until recently, Ms. Sydelko served as the Deputy Division Director for the Decision and Information Sciences Division. She has expertise in systems-level research and technology aimed at developing innovative modeling, analysis, and decision support tools/ technologies, including the development of integrated multi-component software systems. Key modeling domains include environmental/land use, sustainable energy, national security, and infrastructures. Recently, she has established the Energy Systems Center for Analysis and Policy Evaluation (ESCAPE), a collaboration between Argonne, the Energy Policy Institute at the University of Chicago, and Northwestern University's Initiative for Sustainability and Energy at Northwestern.

Mr. Juan Torres

Mr. Juan Torres is senior manager of the Renewable Energy Technologies Group at Sandia National Laboratories where he oversees the wind, water, solar, and geothermal energy programs. Prior to this assignment he was manager of the Energy Surety Engineering & Analysis Department which conducted research in advanced Smart Grid concepts, novel techniques for improving management and control of transmission and distribution power grids, Energy Surety Microgrids™, and grid integration of renewable energy resources. Mr. Torres is the former Assistant Technical Manager on the SPIDERS microgrid project, a DoD-DOE-DHS collaborative project demonstrating cyber secure microgrids at three military installations. He is collaborating with the state of Vermont on a state-wide Smart Grid project, with Japan on Smart Grid demonstration projects in New Mexico, and led Sandia support of the DOE sponsored Hawaii Clean Energy Initiative to help Hawaii



SPEAKER BIOGRAPHIES



achieve a goal of obtaining 70% of its energy from clean energy sources by 2030. In 1998, Mr. Torres was a member of the DOE Critical Infrastructure Protection Task Force assigned with developing a national plan to protect the US energy infrastructure and the DOE infrastructure. From 1999-2005, Mr. Torres led Sandia's Center for SCADA Security, which is a core element of the DOE National SCADA Test Bed, to secure the US energy infrastructure from cyber attack. Mr. Torres has been employed by Sandia National Laboratories for 22 years working in the areas of energy, cyber security, and critical infrastructure protection. Mr. Torres received his Bachelor of Science degree in Electronics Engineering Technology in 1990 from the University of Southern Colorado, a Master of Science degree in Electrical Engineering in 1993 from the University of New Mexico, and has completed additional graduate work in electrical engineering and management science at Stanford University.

Dr. Linton Wells II

Dr. Linton Wells II is the Director of the Center for Technology and National Security Policy (CTNSP) at National Defense University (NDU). He is also a Distinguished Research Professor and serves as the Transformation Chair. Prior to coming to NDU he served in the Office of the Secretary of Defense (OSD) from 1991 to 2007, serving last as the Principal Deputy Assistant Secretary of Defense (Networks and Information Integration). In addition, he served as the Acting Assistant Secretary and DoD Chief Information Officer for nearly two years. His other OSD positions included Principal Deputy Assistant Secretary of Defense (Command, Control, Communications and Intelligence-C3I) and Deputy Under Secretary of Defense (Policy Support) in the Office of the Under Secretary of Defense (Policy). In twenty-six years of naval service, Dr. Wells served in a variety of surface ships, including command of a destroyer squadron and guided missile destroyer. In addition, he acquired a wide range of experience in operations analysis; Pacific, Indian Ocean and Middle East affairs; and C3I. Recently he has been focusing on STAR-TIDES, a research project focusing on affordable, sustainable support to stressed populations and public-private interoperability. Dr. Wells was born in Luanda, Angola, in 1946. He was graduated from the United States Naval Academy in 1967 and holds a Bachelor of Science degree in physics and oceanography. He attended graduate school at The Johns Hopkins University, receiving a Master of Science in Engineering degree in mathematical sciences and a PhD in international relations. He is also a 1983 graduate of the Japanese National Institute for Defense Studies in Tokyo, the first U.S. naval officer to attend there. Dr. Wells has written widely on security studies in English and Japanese journals. He co-authored Japanese Cruisers of the Pacific War, which was published in 1997 and co-edited Crosscutting Issues in International Transformation, published in 2009. His hobbies include history, the relationship between policy and technology, and scuba diving. He has thrice been awarded the Department of Defense Medal for Distinguished Public Service.



SPEAKER BIOGRAPHIES



The Honorable R. James Woolsey

James Woolsey is Chairman of Woolsey Partners LLC and a Venture Partner with Lux Capital Management. He also Chairs the Board of the Foundation for Defense of Democracies. Mr. Woolsey currently chairs the Strategic Advisory Group of the Washington, D.C. private equity fund, Paladin Capital Group, chairs the Advisory Board of the Opportunities Development Group, and he is Of Counsel to the Washington, D.C. office of the Boston-based law firm, Goodwin Procter. In the above capacities he specializes in a range of alternative energy and security issues. Mr. Woolsey previously served in the U.S. Government on five different occasions, where he held Presidential appointments in two Republican and two Democratic administrations, most recently (1993-95) as Director of Central Intelligence. From July 2002 to March 2008 Mr. Woolsey was a Vice President and officer of Booz Allen Hamilton, and then a Venture Partner with VantagePoint Venture Partners of San Bruno, California until January 2011. He was also previously a partner at the law firm of Shea & Gardner in Washington, DC, now Goodwin Procter, where he practiced for 22 years in the fields of civil litigation, arbitration, and mediation. During his 12 years of government service, in addition to heading the CIA and the Intelligence Community, Mr. Woolsey was: Ambassador to the Negotiation on Conventional Armed Forces in Europe (CFE), Vienna, 1989–1991; Under Secretary of the Navy, 1977–1979; and General Counsel to the U.S. Senate Committee on Armed Services, 1970–1973. He was also appointed by the President to serve on a part-time basis in Geneva, Switzerland, 1983–1986, as Delegate at Large to the U.S.–Soviet Strategic Arms Reduction Talks (START) and Nuclear and Space Arms Talks (NST). As an officer in the U.S. Army, he was an adviser on the U.S. Delegation to the Strategic Arms Limitation Talks (SALT I), Helsinki and Vienna, 1969–1970. Mr. Woolsey serves on a range of government, corporate, and non-profit advisory boards and chairs several, including that of the Washington firm, ExecutiveAction LLC. He serves on the National Commission on Energy Policy. He is currently Co-Chairman of the Committee on the Present Danger. He is Chairman of the Advisory Boards of the Clean Fuels Foundation and the New Uses Council, and a Trustee of the Center for Strategic & Budgetary Assessments. Previously he was Chairman of the Executive Committee of the Board of Regents of The Smithsonian Institution, and a trustee of Stanford University. He has also been a member of The National Commission on Terrorism, 1999–2000; The Commission to Assess the Ballistic Missile Threat to the U.S. (Rumsfeld Commission), 1998; The President’s Commission on Federal Ethics Law Reform, 1989; The President’s Blue Ribbon Commission on Defense Management (Packard Commission), 1985–1986; and The President’s Commission on Strategic Forces (Scowcroft Commission), 1983. Mr. Woolsey has served in the past as a member of boards of directors of a number of publicly and privately held companies, generally in fields related to technology and security, including Martin Marietta; British Aerospace, Inc.; Fairchild Industries; and Yurie Systems, Inc. In 2009, he was the Annenberg Distinguished Visiting Fellow at the Hoover Institution at Stanford University and in 2010-11 he was a Senior



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Fellow at Yale University's Jackson Institute for Global Affairs. Mr. Woolsey was born in Tulsa, Oklahoma, and attended Tulsa public schools, graduating from Tulsa Central High School. He received his B.A. degree from Stanford University (1963, With Great Distinction, Phi Beta Kappa), an M.A. from Oxford University (Rhodes Scholar 1963–1965), and an LL.B from Yale Law School (1968, Managing Editor of the Yale Law Journal). Mr. Woolsey is a frequent contributor of articles to major publications, and from time to time gives public speeches and media interviews on the subjects of energy, foreign affairs, defense, and intelligence. He is married to Suzanne Haley Woolsey and they have three sons, Robert, Daniel, and Benjamin.

Bistro Tenderloin

Steak rubbed with Sage, Pepper, Garlic, and Salt, browned, then roasted, sliced, and drizzled with a rich Merlot-Shallot Sauce

Bruschetta Chicken

Boneless Chicken Breasts sautéed in Olive oil, Shallots, and Dry White Wine w/ Tomato, Fresh Basil and Capers

Tri-Color Roasted Potatoes

Yukon Gold, Red Bliss and Peruvian (Blue) Potatoes

Spinach and Goat Cheese Salad

With Sun-Dried Tomatoes, Glazed Walnuts, and Cider Vinaigrette

Asparagus

Topped with Chive Vinaigrette

Artisan Rolls and Butter

Chocolate Truffle Cake Slices

***Energy Security as a Grand Strategy Conference
National Defense University, 7 May 12***

***Panel on Energy Security
System as a Wicked Problem
The Wicked Problem of
Military Operational
Energy in Combat Zone***

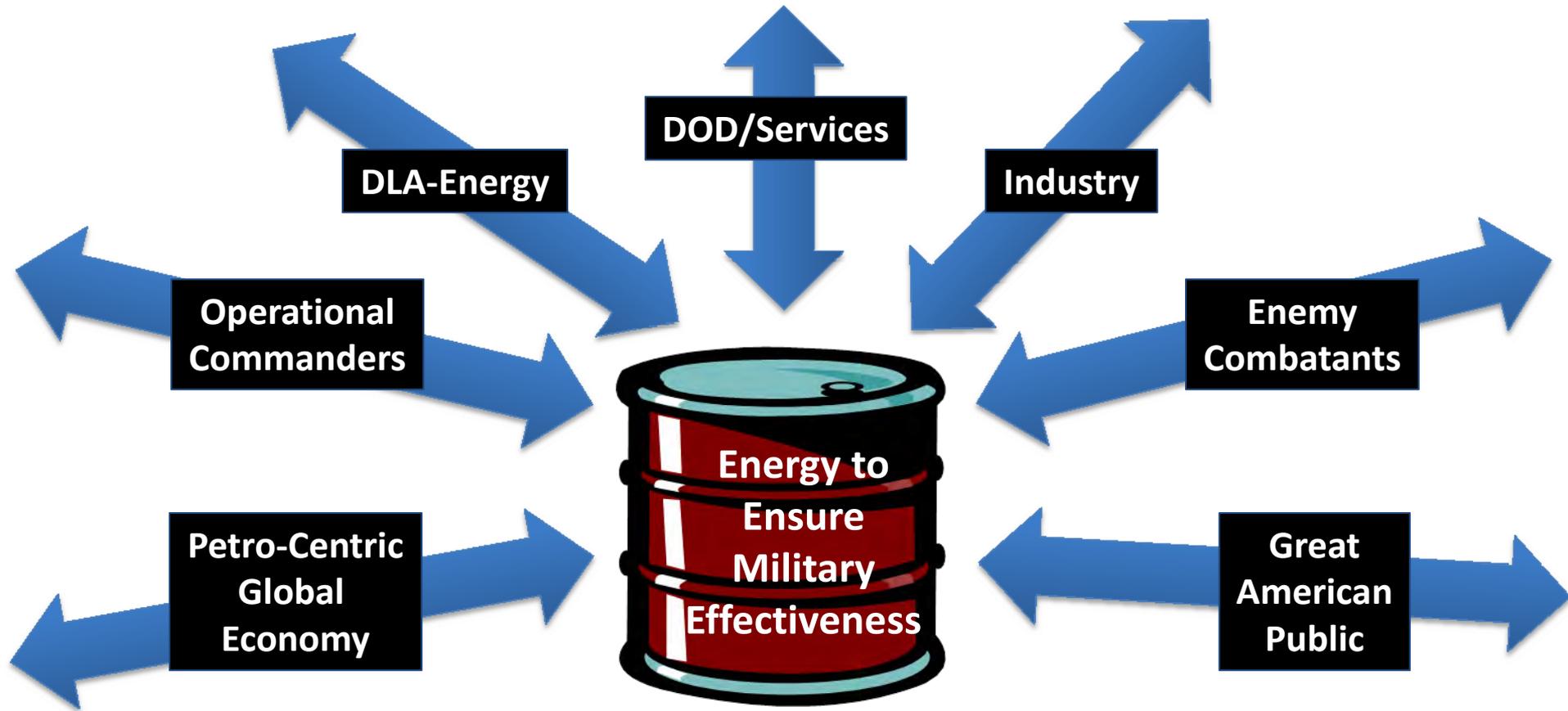
Steven M. Anderson

Brigadier General, US Army (Retired)

Chief Marketing Officer & Partner, Relyant LLC

Sanderson@gorelyant.com

Key Elements of this Wicked Problem



Opn'l Energy environment complex and dynamic... Multiple competing interests and stakeholders... DoD leaders not fully in charge even of DoD energy (e.g. oil prices)

The Problem's Impact: Stagnation

MGEN Zilmer in 2004 in Al Anbar Province:
"Release me from the tether of fuel!"



Over 7 years, **VERY LITTLE HAD CHANGED**... The vital need to **REDUCE ENERGY DEMAND** is not being implemented... and energy is rarely a consideration in key operational and acquisition decisions

Stagnation Contributing Factors



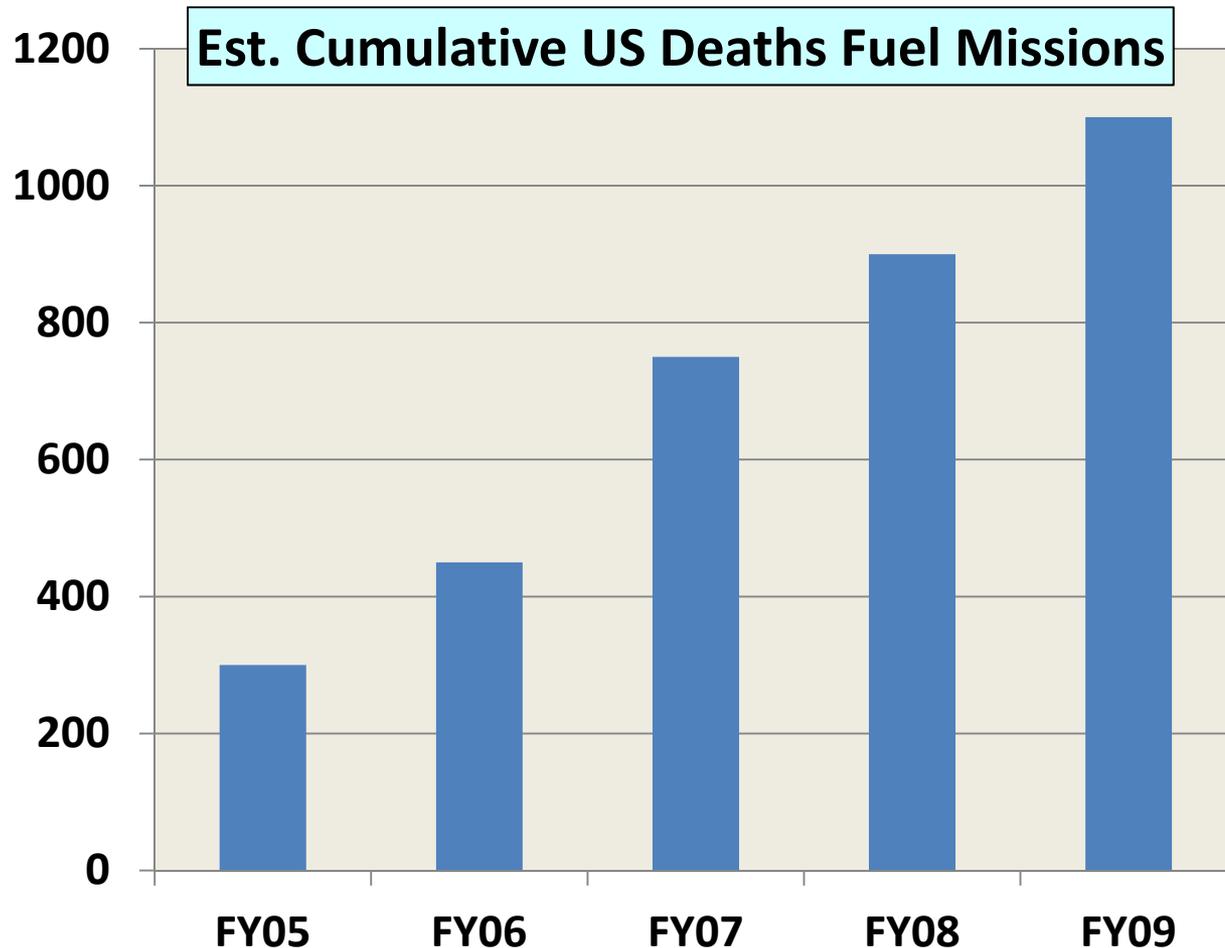
- *Most operational leaders are not **ACCOUNTABLE** or **RESPONSIBLE** for energy use*
- *Leaders do not pay \$ for their energy use*
- *Those buying energy (Def Log Agency-Energy) have little impact on consumption of energy*
- *Competing priorities and workload*
- *Lack of metrics for tracking and reporting*
- *DOD desire to avoid impositions on Opn'l Cdrs*
- *Industry NOT incentivized to reduce energy use*

Hard to motivate demand reduction when leaders are rarely really graded on energy performance

Despite 10 years of OEF...

***WE DON'T APPRECIATE OR
ACCOUNT FOR TRUE COSTS
ASSOCIATED WITH ENERGY..
AND THEREFORE DON'T
VALUE DEMAND REDUCTION
OR EFFICIENCY***

Cost of Energy in BLOOD



***US cumulative fuel-related deaths now well over 1000;
fuel trucks increasingly targeted (2011 top IED year)***

Cost of Energy in DOLLARS

Bloomberg, 9 Feb: “The U.S. military’s appetite for oil may snarl efforts to pare defense spending by about \$490 billion in the next decade.... The Pentagon, the world’s largest consumer of energy, spent \$17.3 billion on petroleum in fiscal 2011, a 26 percent increase from previous year.”

Location	Fully Burdened Fuel Cost (per gallon)
US	\$3.95
Iraq	\$18
Afghan Major Hubs	\$15/\$30/\$50
Afghan Outposts	\$100-500

Must consider FBFC (overhead) in order to understand real costs

Afghan Annual Fuel Costs:

\$10B/\$20B/\$33B

(1.8M gal/day) x (365 days) x FBFC

In considering of FBFC, taxpayers will probably spend \$20B in 2012 on energy in Afghanistan/combat zone

Cost: Military Effectiveness – Part 1

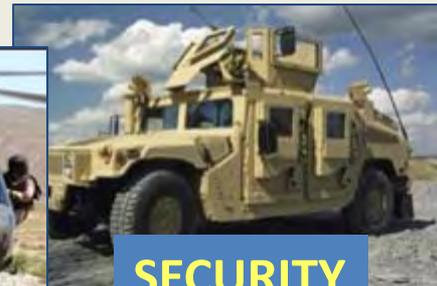


**Afghanistan:
Perhaps
most isolated
country on
earth**

Military Hidden Costs:



MEDEVAC



SECURITY



**CMD &
CONTROL**



**ROAD MAINT
& CONSTRUCT**

**Energy use has DIRECT impact on Military Effectiveness
– energy overhead consumes huge military resources**

Cost: Military Effectiveness - Part 2



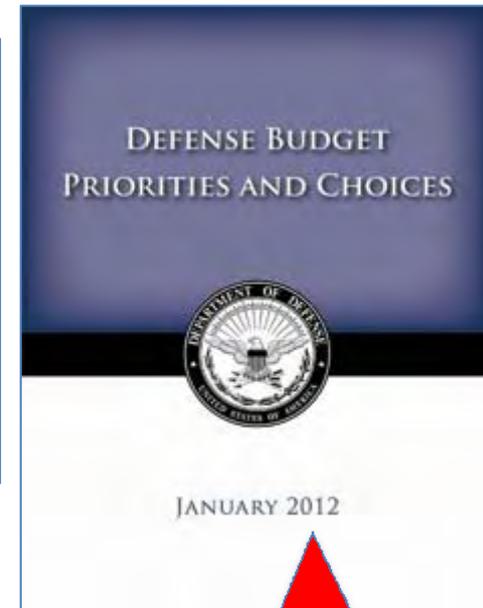
- ***Fuel Trucks = Taliban Targets***
- ***Fuel convoy attacks provide great photo ops for enemy recruitment and fund raising***
- ***Graft provides revenues for local terrorists***
- ***Global fuel funds enemy war fighting assets – IED's, weapons, recruiting (\$1B per day to Iran, etc.)***

Long supply lines vulnerable (14-25 days to transit); huge opportunities for interdiction and corruption

***WHAT ARE DOD POLICY-
MAKERS DOING TO
REDUCE THESE COSTS
AND ADDRESS THIS
WICKED PROBLEM?***

Energy Cost Saving Potential not Recognized

Energy Cost Savings totally absent from “Defense Budget Priorities and Choices” (Jan 12):



- **Process vs. Action Orientation**
- **Weight of Bureaucracy**
- **Changing the culture to value energy reduction and efficiency**

15 page document with NO MENTION of Energy

Energy Efficiency can lead to tremendous cost savings – must be recognized at all levels

Strategy and Implementation Plan

Operational
Energy
Strategy
(Jun 11)

Operational
Energy
Implementation
Plan
(Mar 12)

- ***Both Documents published 6 months late***

IMPLEMENTATION PLAN OBJECTIVES

1. Improve the way energy consumption is measured
2. Boost energy efficiency in combat operations and training.
3. Promote innovation.
4. Improve energy efficiency at military installations.
5. Stimulate the development of alternative fuels
6. Include energy-security considerations into weapon-system acquisitions.
7. Adapt military policy, doctrine and education so that energy efficiency becomes part of the culture of Defense Department activities.

“This 28 page implementation plan for the 13 page strategy will disappoint many. For those who are for bold action, it is too late. Bold action was necessary in 2001 when the Defense Science Board published its first findings on DOD energy.” DOD Energy Blog’s Dan Nolan

Strategies or Implementations Plans without real teeth will not address problem – Military reacts to REQUIREMENTS

Energy Good News & Success

- ***Army REF Power Surety Task Force ('06-'10)***
- ***Spray Foam Program in Iraq/Afghanistan ('07-'09)***
 - ***AMSAA Study: \$1B annual cost avoidance and 11K fuel trucks off road***
- ***NetZero JCTD at Fort Irwin ('07-'09)***
- ***Marine Experimental FOB (ongoing)***
- ***Army SAGE (Demo at Fort Devens)***
- ***Army NetZero at Fort's Bliss & Carson (ongoing)***
- ***SECNAVY energy reduction stretch goals (ongoing)***
- ***Air Force Synthetic Fuels.... And much more...***

Numerous programs have demonstrated Energy Efficiency DOES work – and should empower DOD to build upon these successes

***CAN MORE EFFECTIVE
DOD POLICY HELP TO
WE VALUE TRUE COSTS
AND ADDRESS THIS
WICKED PROBLEM?***

Precedent of Policy from Top

- **MRAP (Mine Resistant Ambush Protected) Program -- Vehicles to Iraq/Afghanistan**
- **SECDEF directive kicked off comprehensive campaign to replace HMMWV with a safer vehicle in one year (2008).... And put \$30B behind effort**
- **DOD mobilized *industry* (5 x OEMs) and *military* to deliver 12K enhanced vehicles**
- **Effort has easily saved at least 100 lives... and countless casualties & suffering**



NO SERIOUS INJURIES
FROM THIS IED ATTACK

**In 2007 SECDEF made fielding MRAP's a REQUIREMENT
– cut thru bureaucracy to **SAVE LIVES****

Making Energy Efficiency a Requirement

Draft SECDEF “Energy Requirement” Directive:

- **Reducing energy demand is priority throughout DOD**
- **Energy consumption is a Key Performance Parameter (KPP) in all activities, operations and acquisitions**
- **DOD will track and report energy use at every level**
- **All leaders will be held responsible and accountable for energy consumption within their organizations**
- **Use Fully Burden Fuel Costs for all assessments**
- **Integrate into all DOD processes (JCIDS, PPBE, etc.)**

Good News: 2 May SECDEF Speech

STRONG COMMENTS FROM Secretary Panetta:



“We are working to be a leader and a bold innovator in energy stewardship, energy efficiency and energy security.”

“Our drive to be more efficient and environmentally sustainable has the potential to transform the nation’s approach to the challenges we are facing in the environment and energy security.”

“DOD will seek to demonstrate next-generation energy tech.”

“Have a deep interest in more sustainable & efficient energy options.”

Must follow up strong declarations with **POLICY to REQUIRE ENERGY EFFICIENCY NOW...** Will align resources and get entire team on board

What would Result from this Policy?

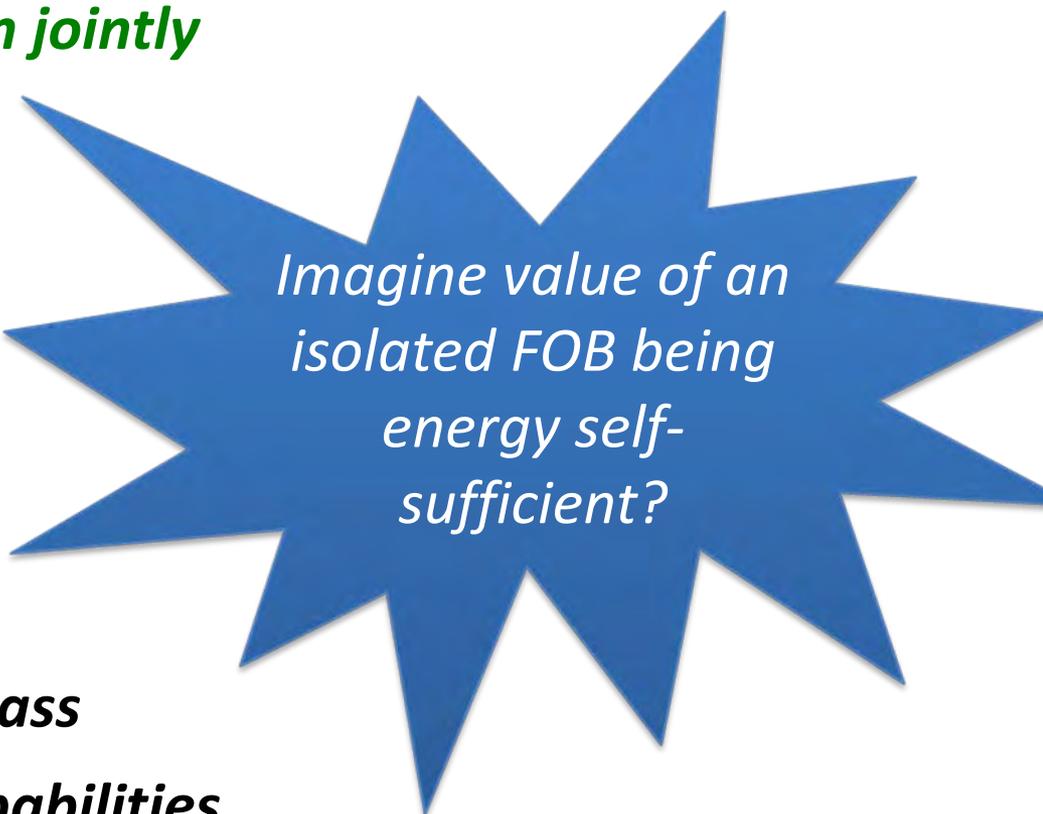
- 1. Obtain \$Billions in cost avoidance**
 - *SECDEF looking for \$100B in 5 years...*
 - *25% energy cut = \$5B/year cost avoidance*
- 2. Save lives and reduce risks**
 - *Still thousands troops & contractors at risk*
 - *Thousands of fuel trucks off the road*
- 3. Reduce our tactical vulnerabilities**
- 4. Reduce opportunities for graft & corruption**

Combat Effectiveness ENHANCED

Also: Enable Energy Technology

INDUSTRY & MILITARY can jointly leverage:

- *Solar*
- *Wind*
- *Geothermal*
- *Hydroelectric*
- *Energy Storage*
- *Waste-to-Energy/Biomass*
- *Other technologies/capabilities*



Imagine value of an isolated FOB being energy self-sufficient?

Energy efficient design and construction could lower total energy requirement such that alternative energy technologies can truly MAKE A DIFFERENCE!

***EFFECTIVE DOD POLICY
CAN SET CONDITIONS TO
FIX THIS WICKED
PROBLEM; CAN SERVE AS
AN EXAMPLE FOR OUR
NATION... AND ENHANCE
NATIONAL SECURITY***

Energy security- Simplifying thoughts about a complex subject

Steven E. Koonin – Director, NYU/CUSP

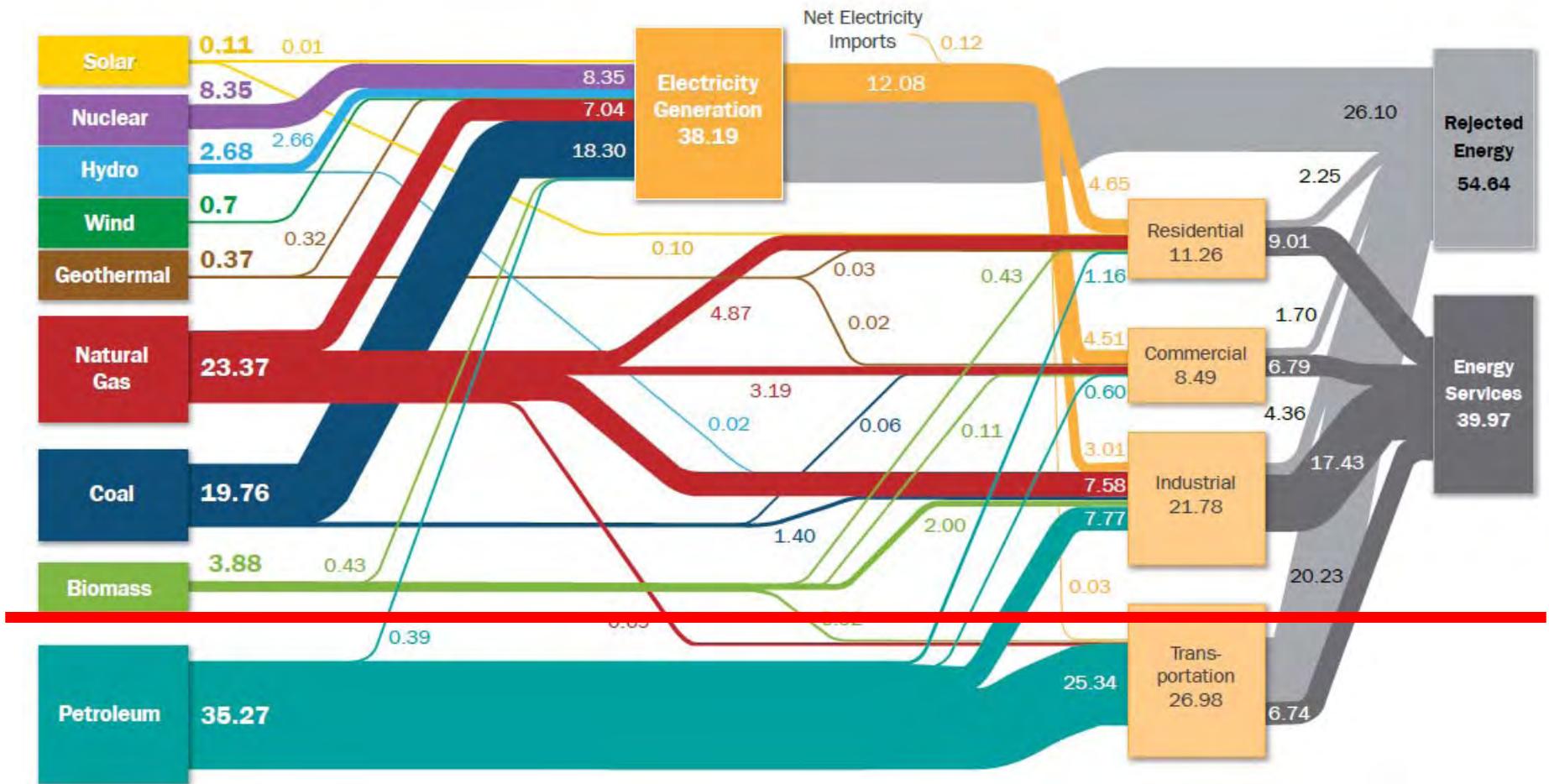
*Conference on Energy Security as a Grand
Strategy*

National Defense University

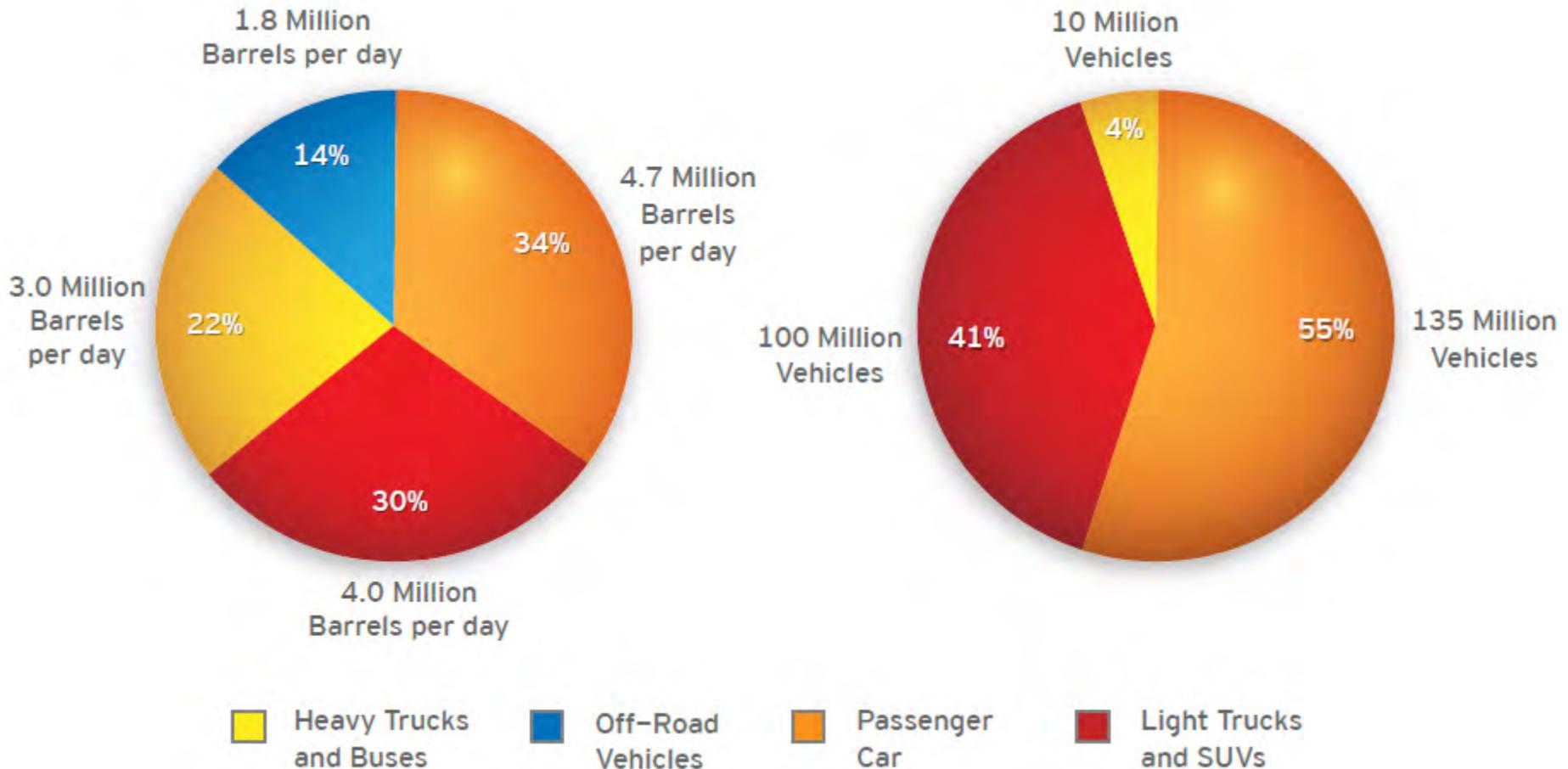
May 7, 2012

U.S. Energy Flows in 2009

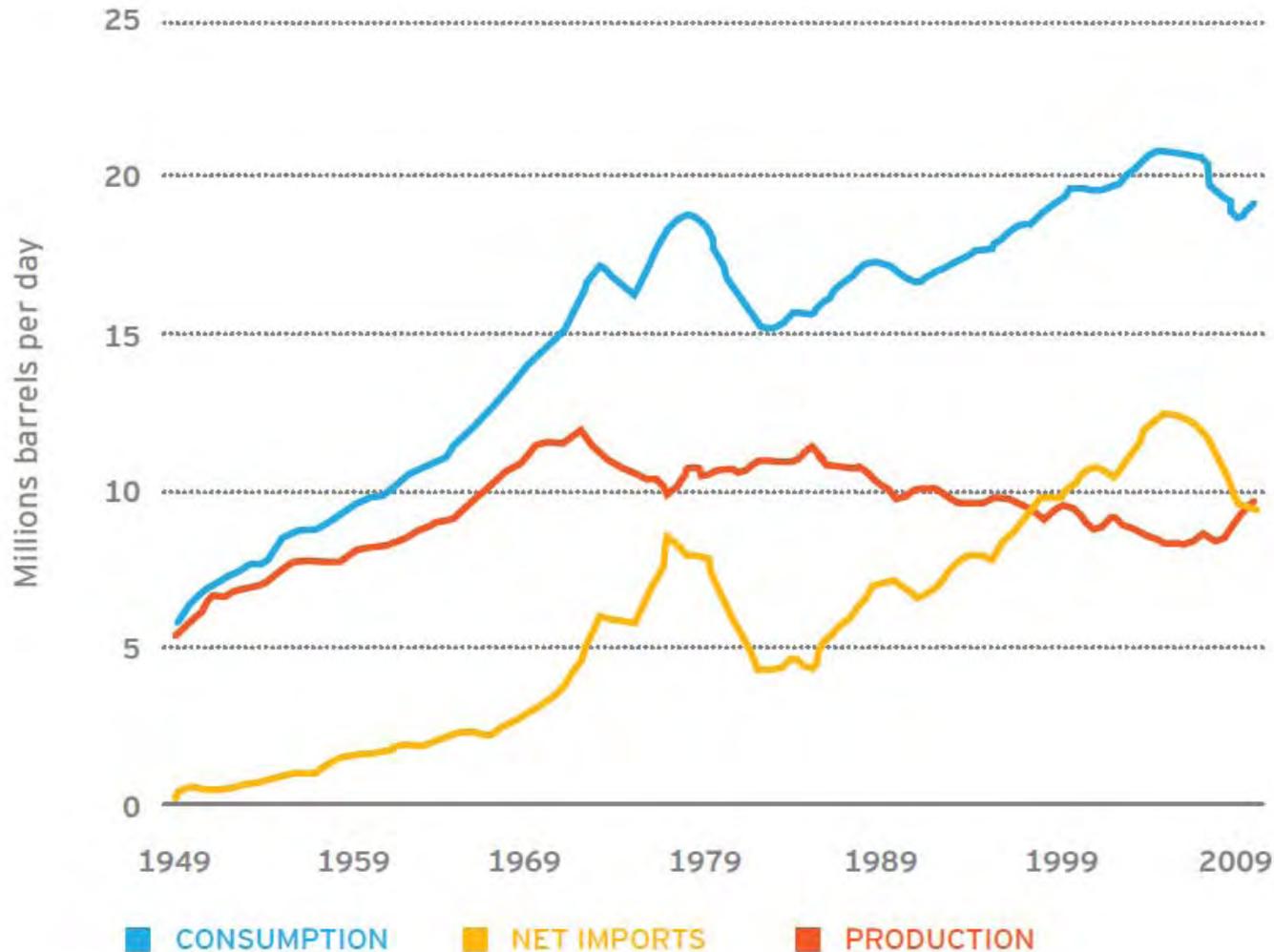
Total energy input is approximately 95 Quads



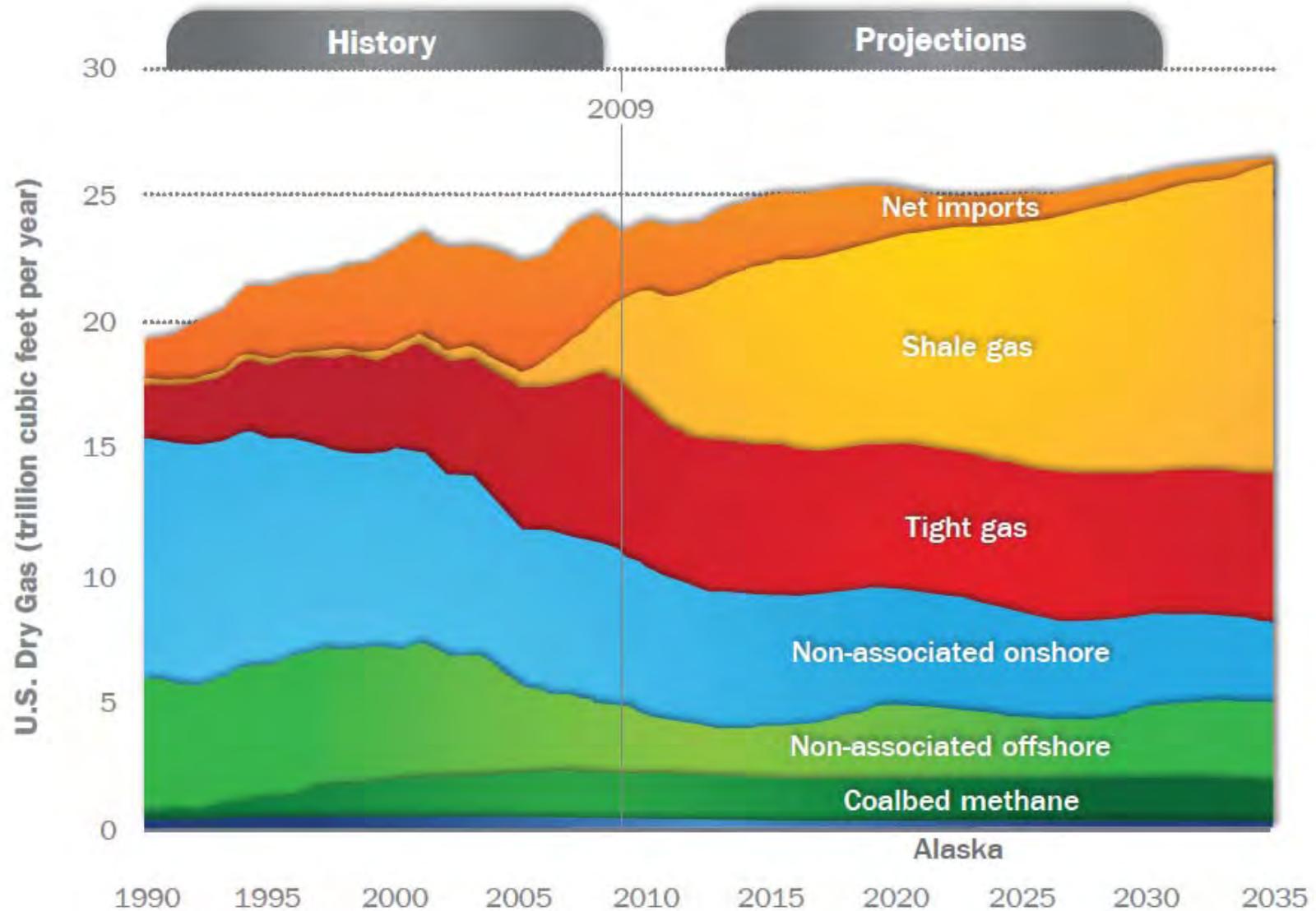
Total Vehicle Fuel Use and Total U.S. Road Vehicles in 2009



Trends in U.S. Consumption, Production, and Net Imports of Petroleum and Other Liquid Fuels, 1949-2010



U.S. Natural Gas Supply, 1990-2035



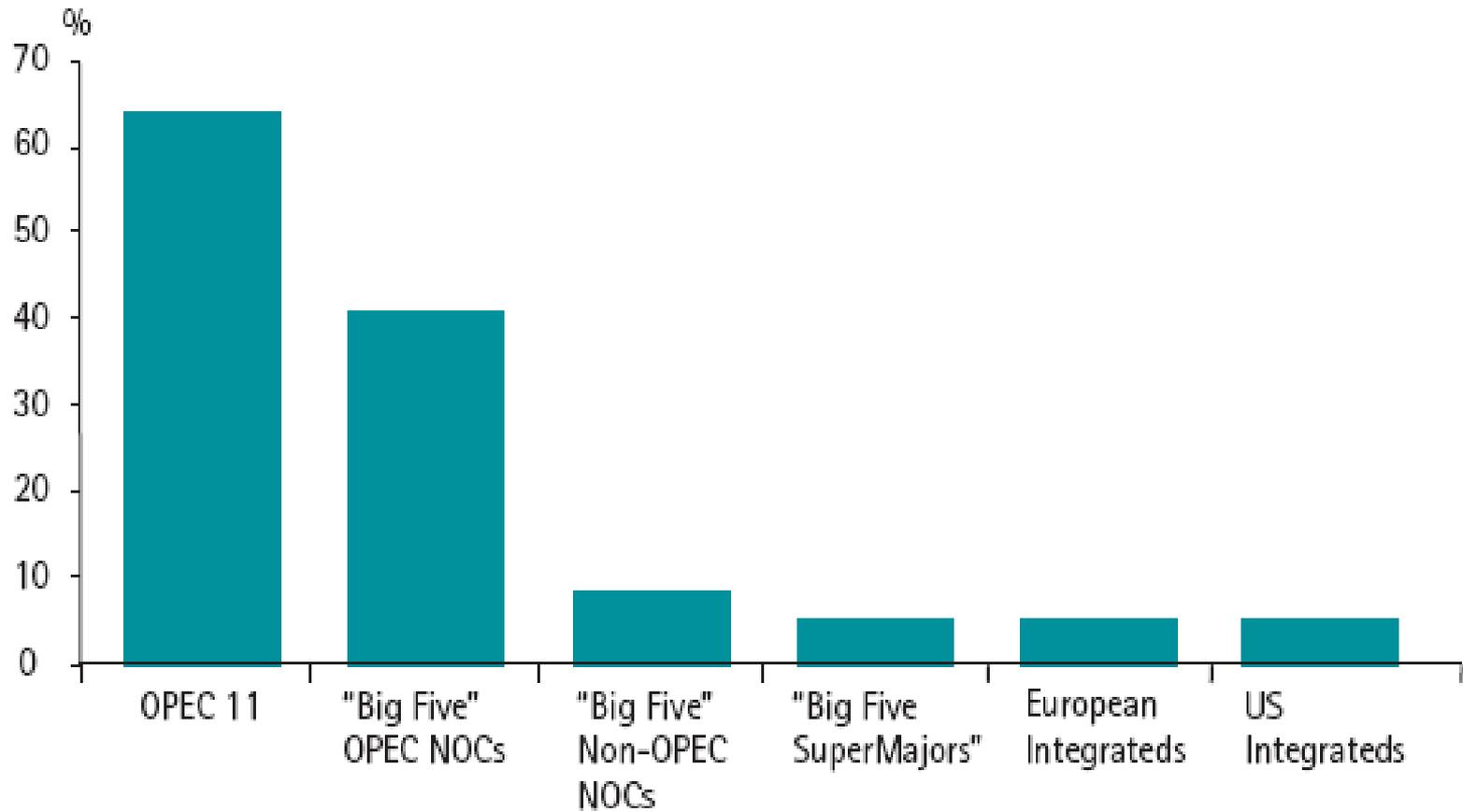
There are four sub-problems in the oil problem

- Physical Security
- Trade deficit
- Price volatility
- Greenhouse gas emissions

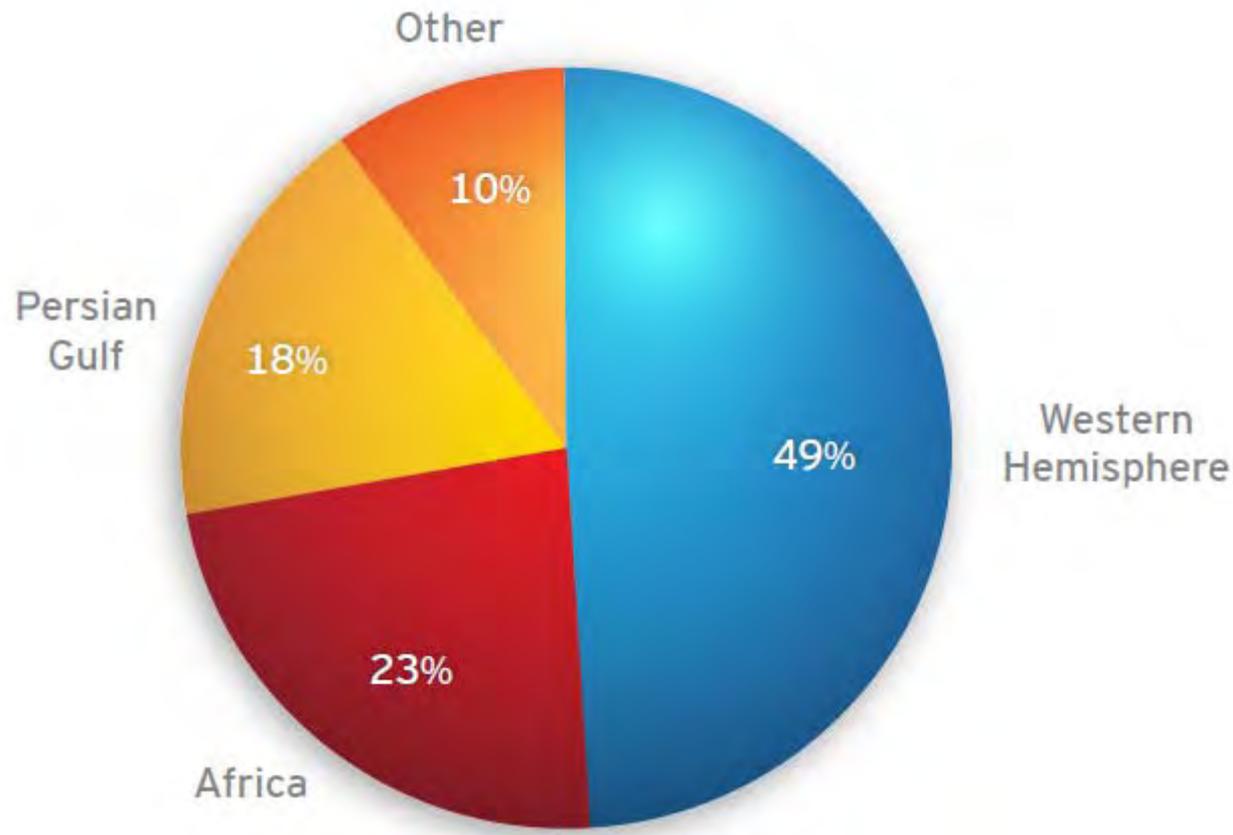
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Access to conventional crude reserves



Sources of U.S. Net Petroleum Imports, 2010



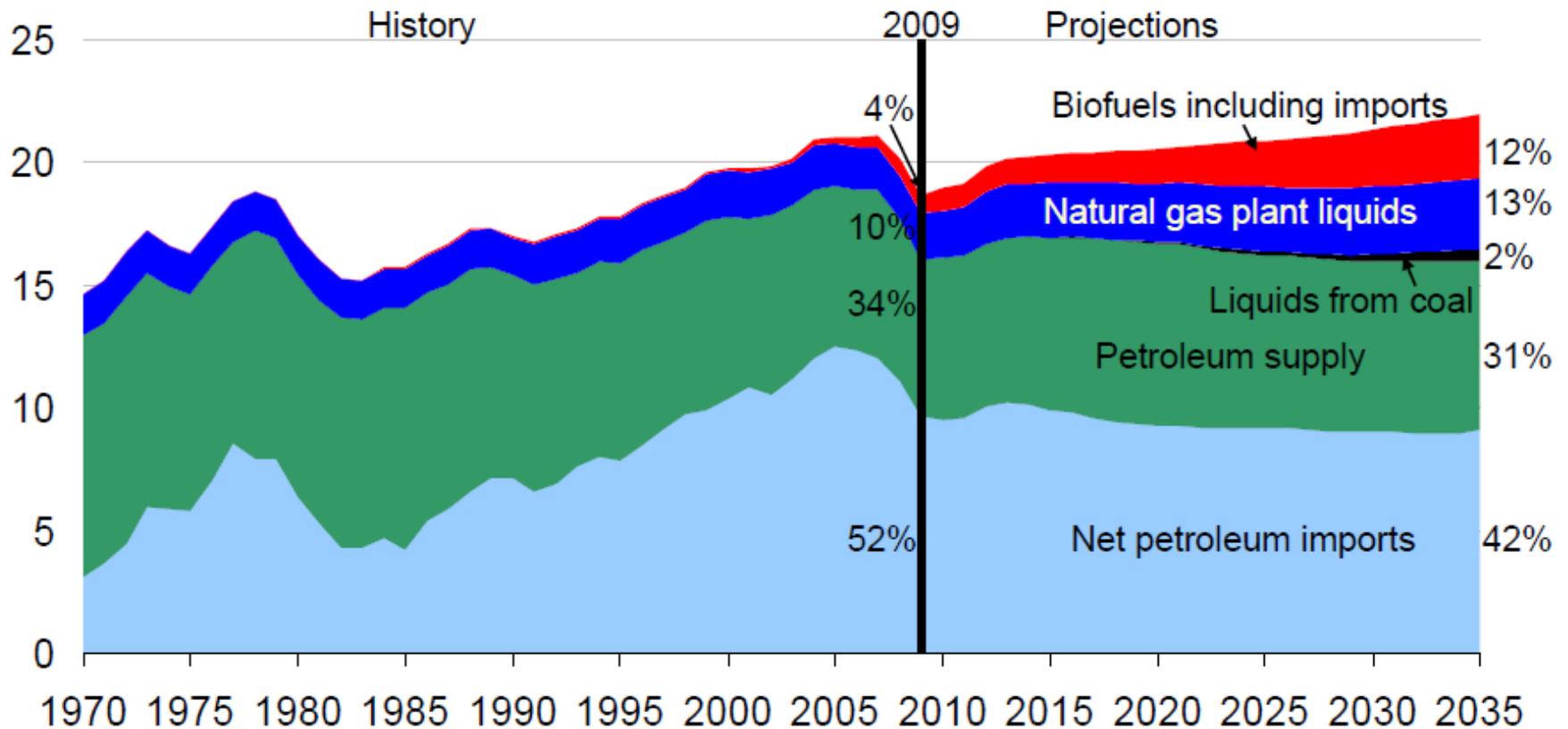
The United States gets close to 50% of its petroleum imports from the Western Hemisphere and less than 20% from the Persian Gulf.

There are four sub-problems in the oil problem

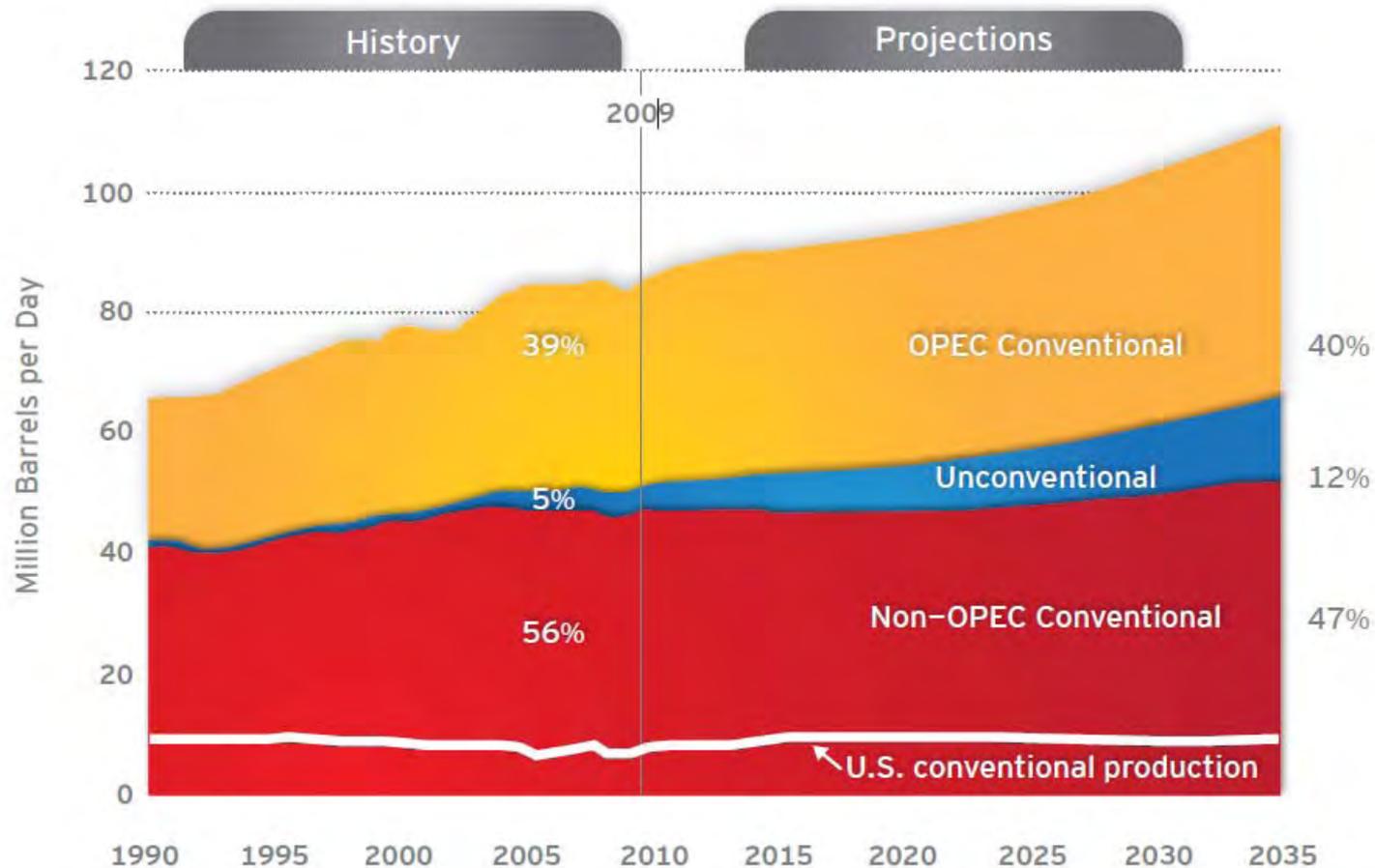
- Physical Security
- Trade deficit
- Price volatility
- Greenhouse gas emissions

US liquid fuel use

U.S. liquid fuels consumption
million barrels per day



Global Liquids Production, 1990-2035

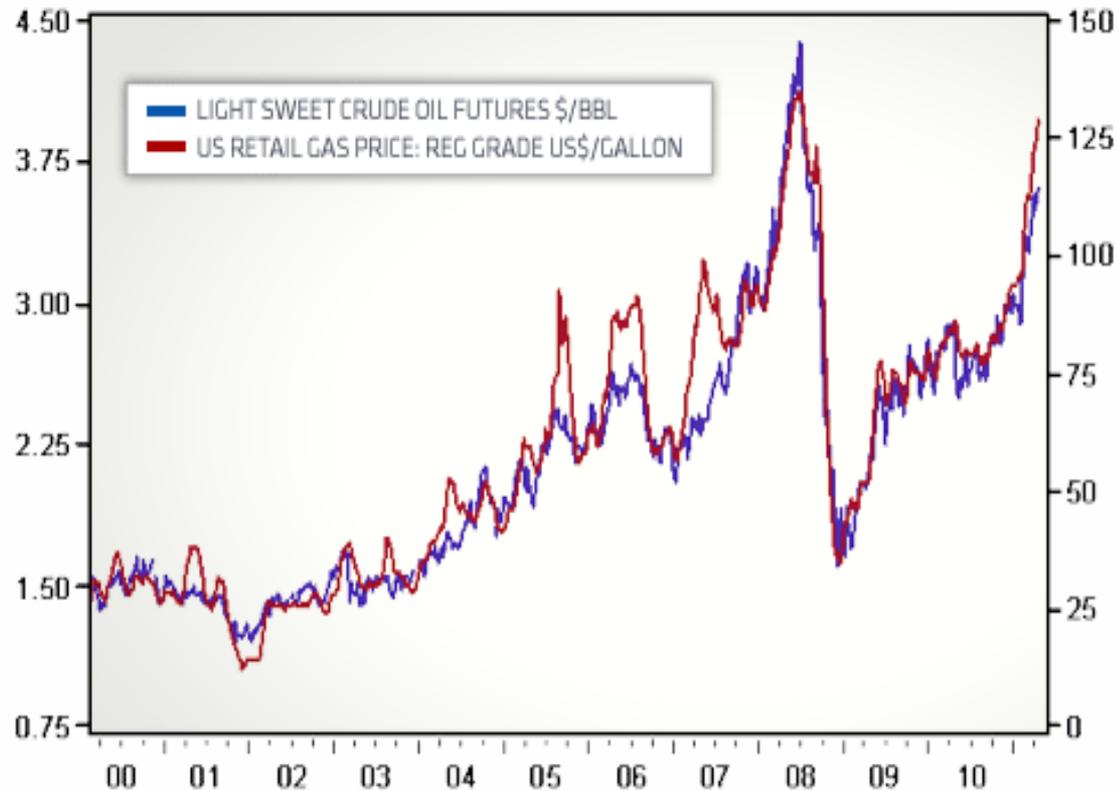


(Total includes crude oil, natural gas liquids, and biofuels). Constant U.S. conventional production is projected. (EIA, Annual Energy Outlook 2011). For reference, both Gulf of Mexico crude and corn ethanol productions increased by 0.8 million barrels per day over a decade.

There are four sub-problems in the oil problem

- Physical Security
- Trade deficit
- Price volatility
- Greenhouse gas emissions

Gasoline price is driven by crude price



Source: CNBC, derived from EIA/DOE/WSJ/Haver data.

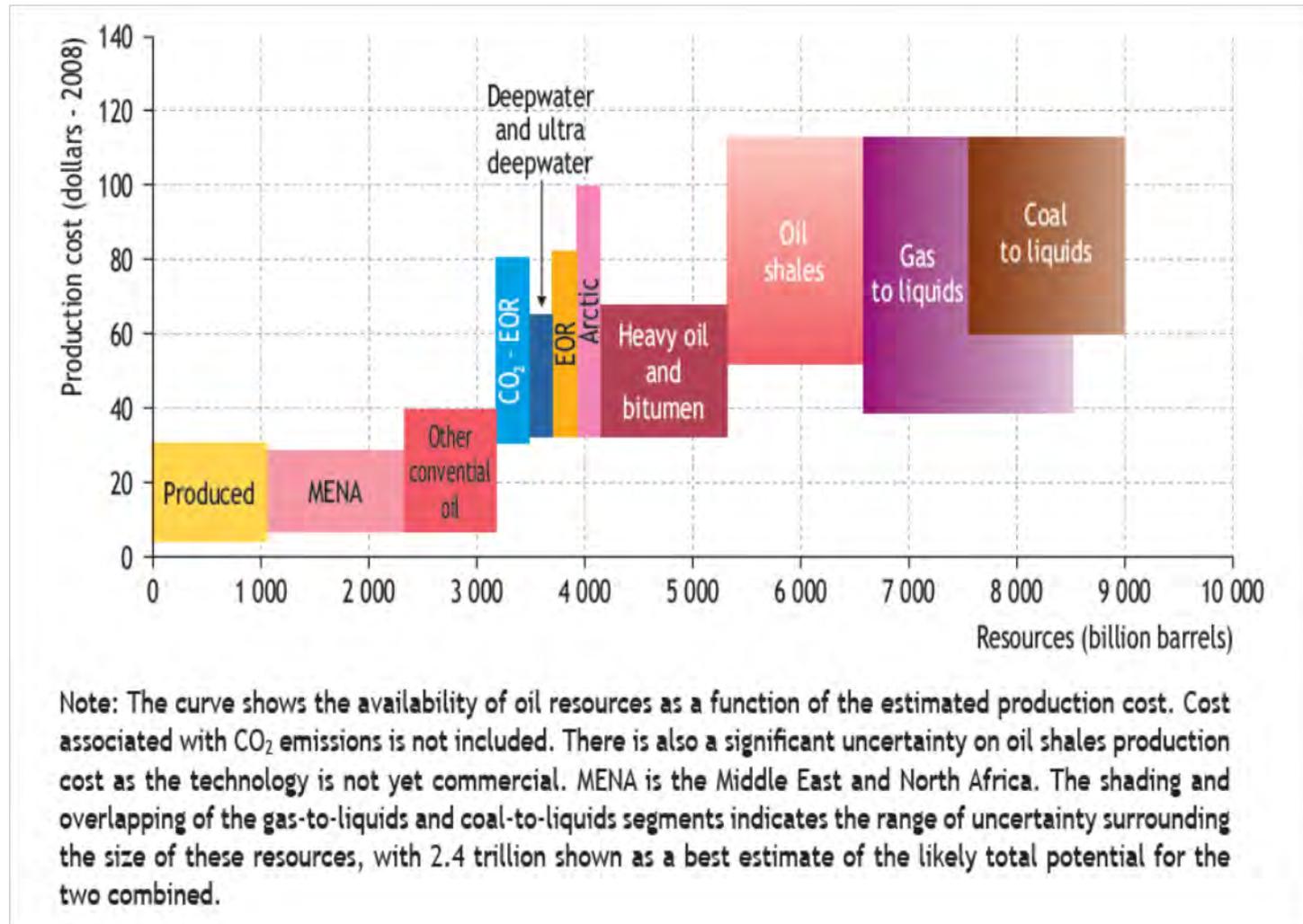
There are four sub-problems in the oil problem

- Physical Security
- Trade deficit
- Price volatility
- **Greenhouse gas emissions**
 - \$40/t CO₂ in power is \$0.35/gal in transport

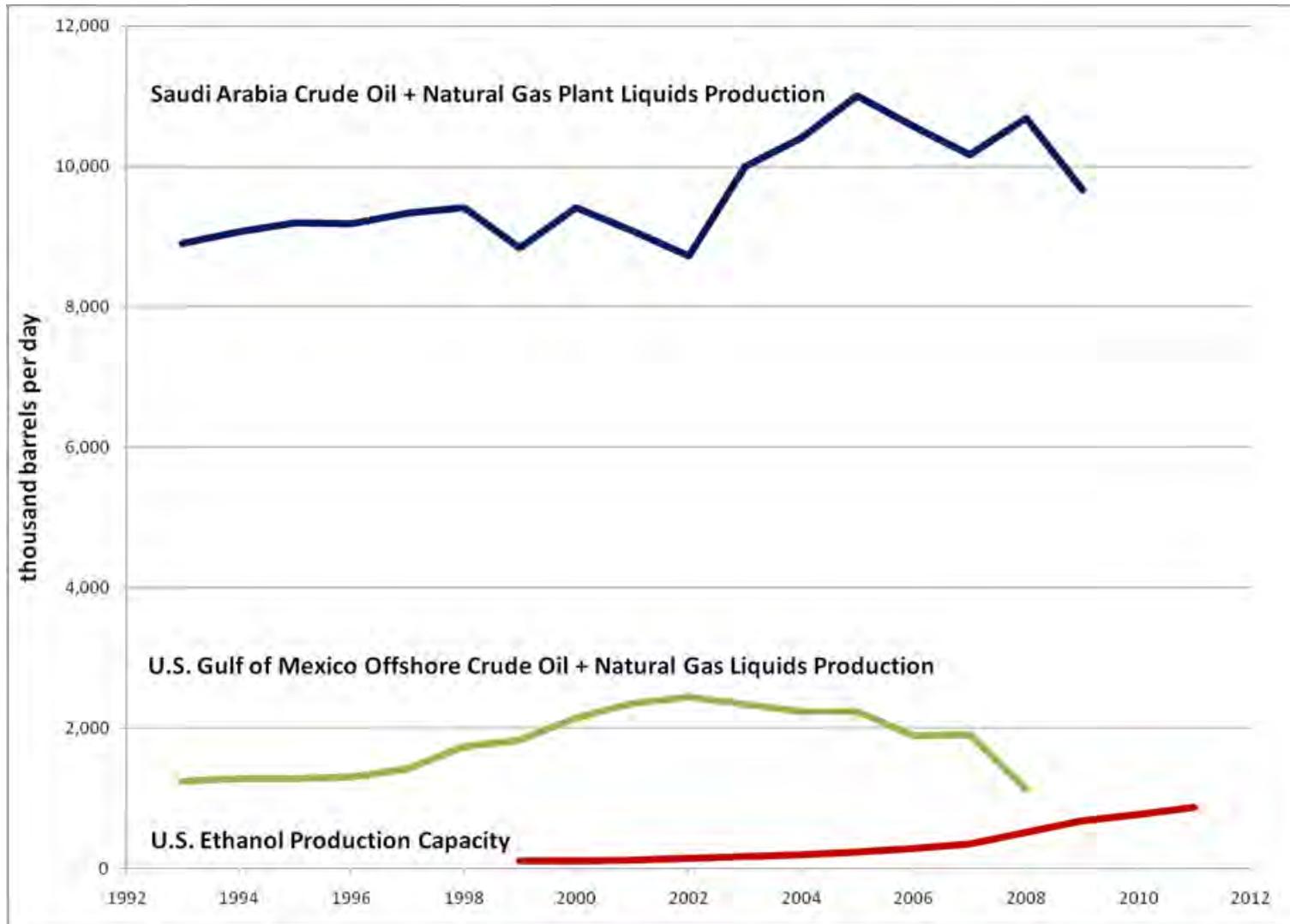
Oil Strategy Scorecard

	Security	Trade	Price	GHGs
Efficiency	✓	✓	✓	✓
“Drop ins”				
Oil	✓	✓	x	x
XTL	✓	✓	x	x?
Biofuels	✓	✓	x	?
“Drop outs”				
CNG	✓	✓	✓	x
H2	✓	✓	✓	?
Electricity	✓	✓	✓	✓

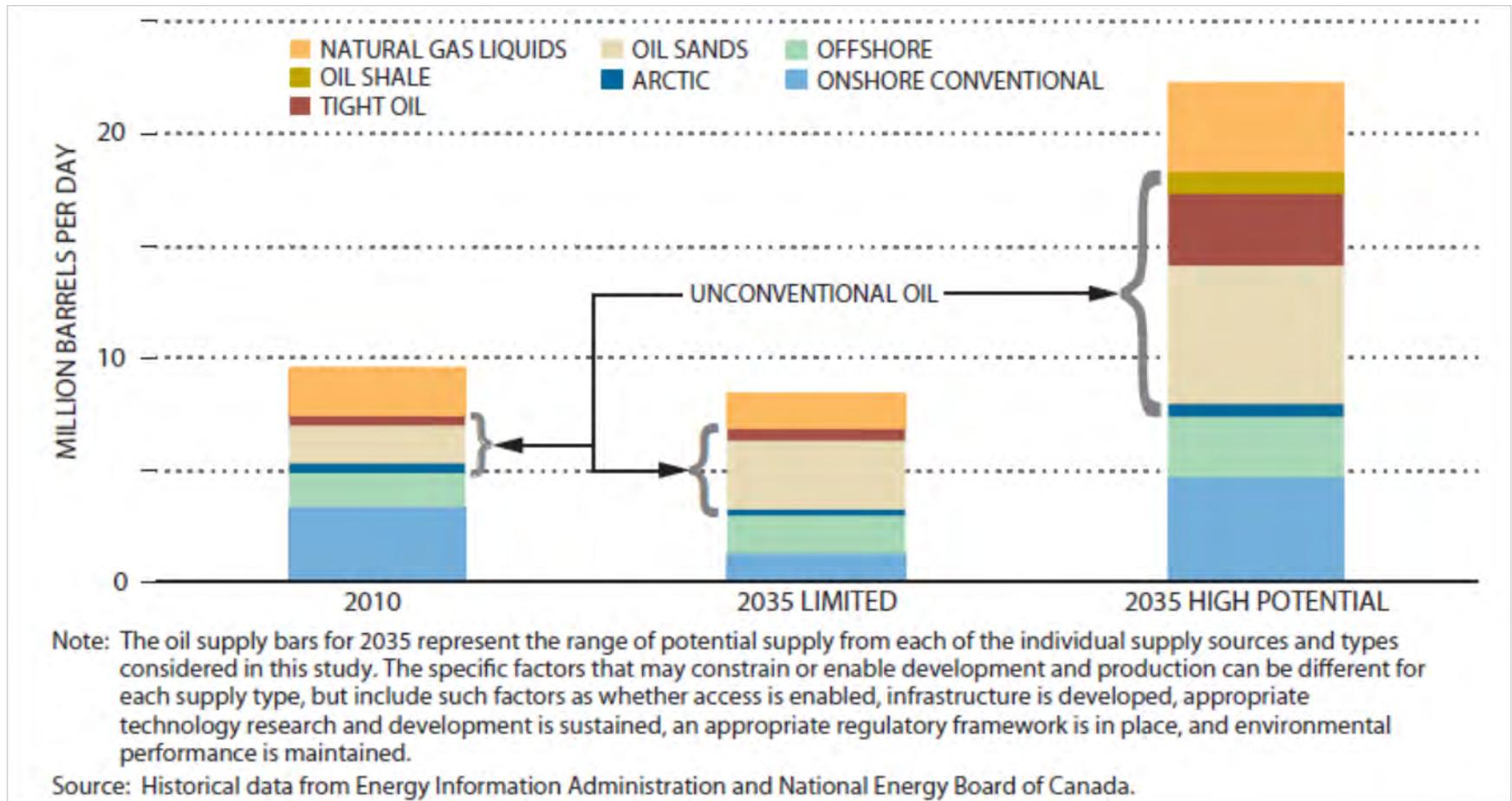
Long-term oil supply cost curve



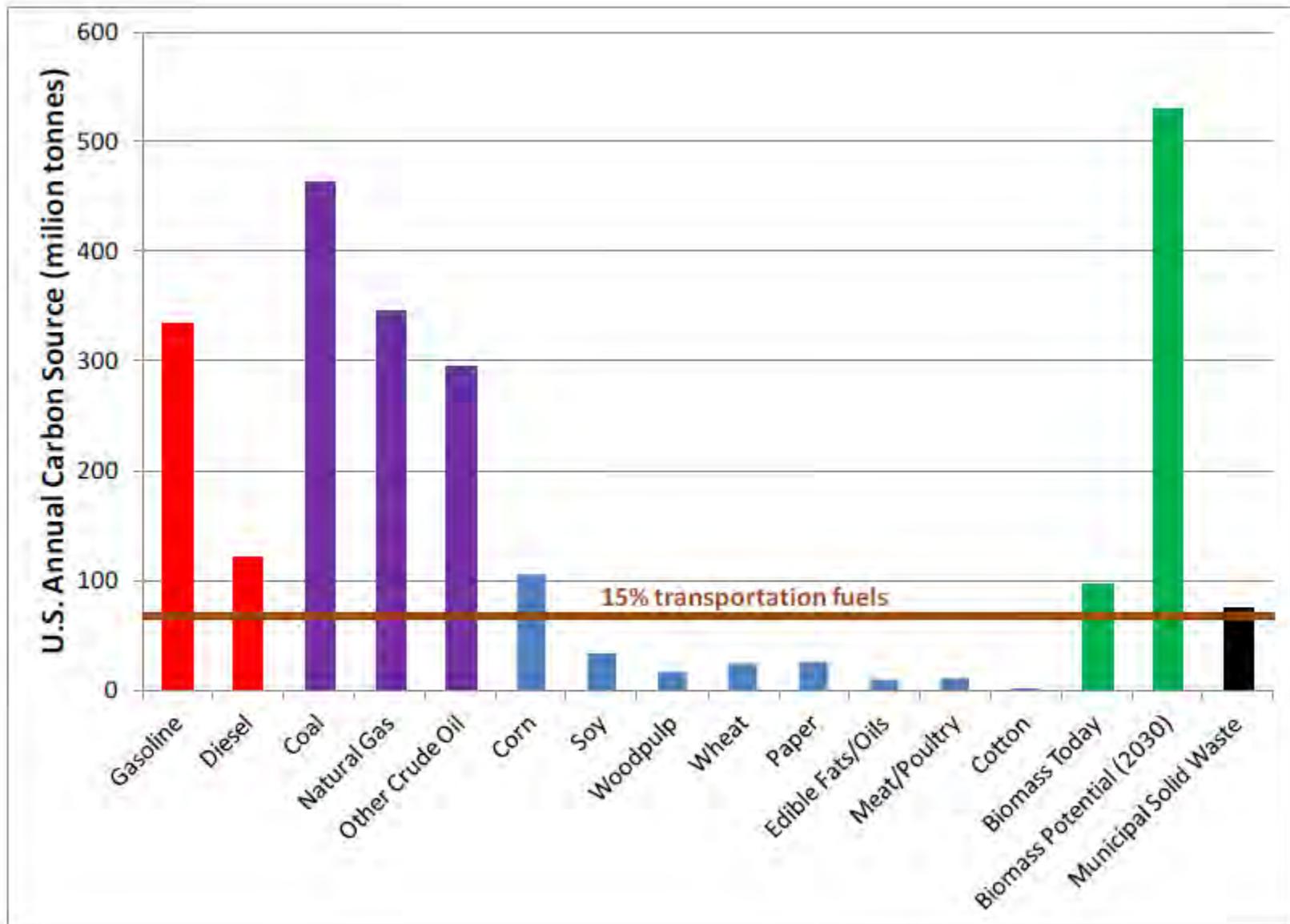
Saudi, GOM, and U.S. ethanol production



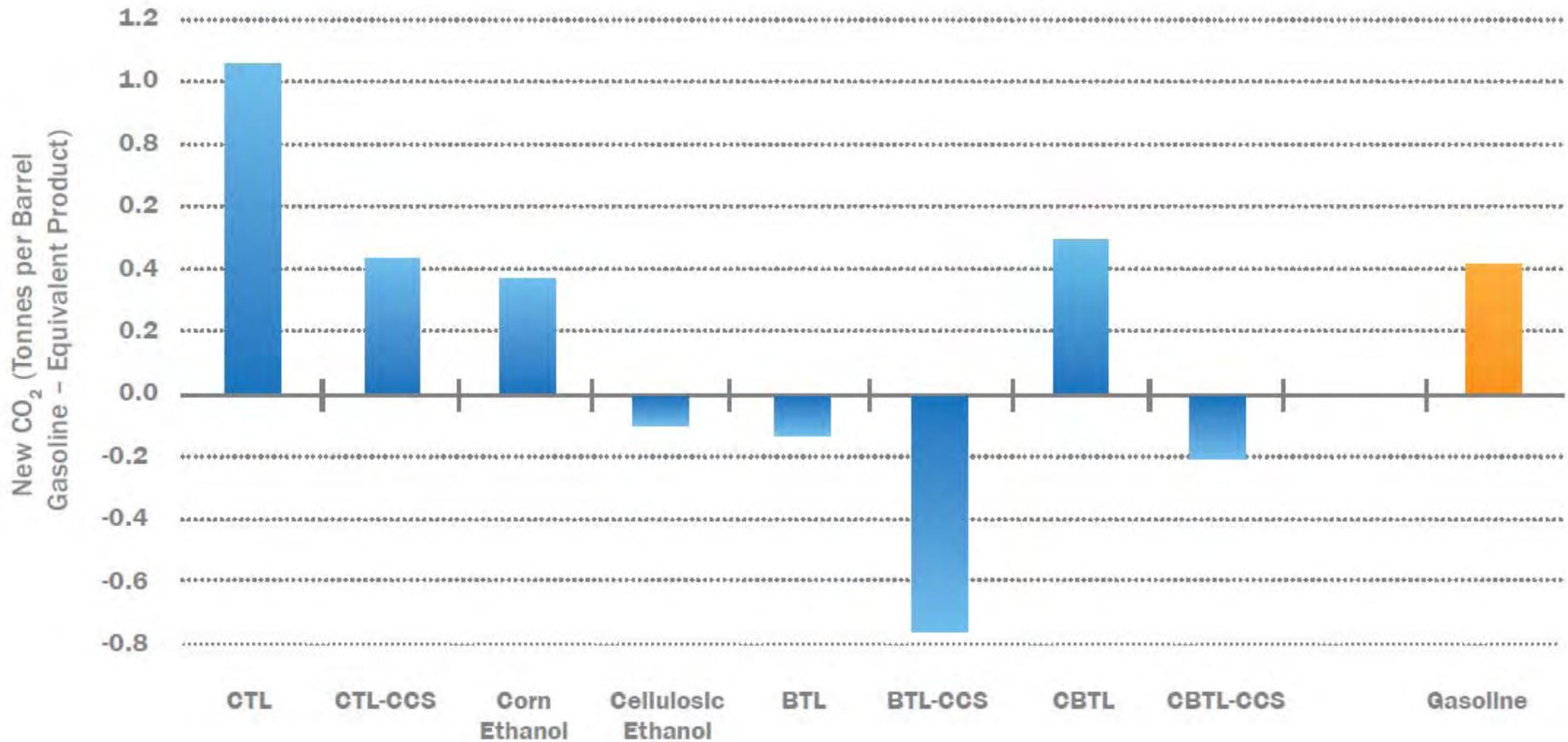
North American oil production



Annual US Carbon flows



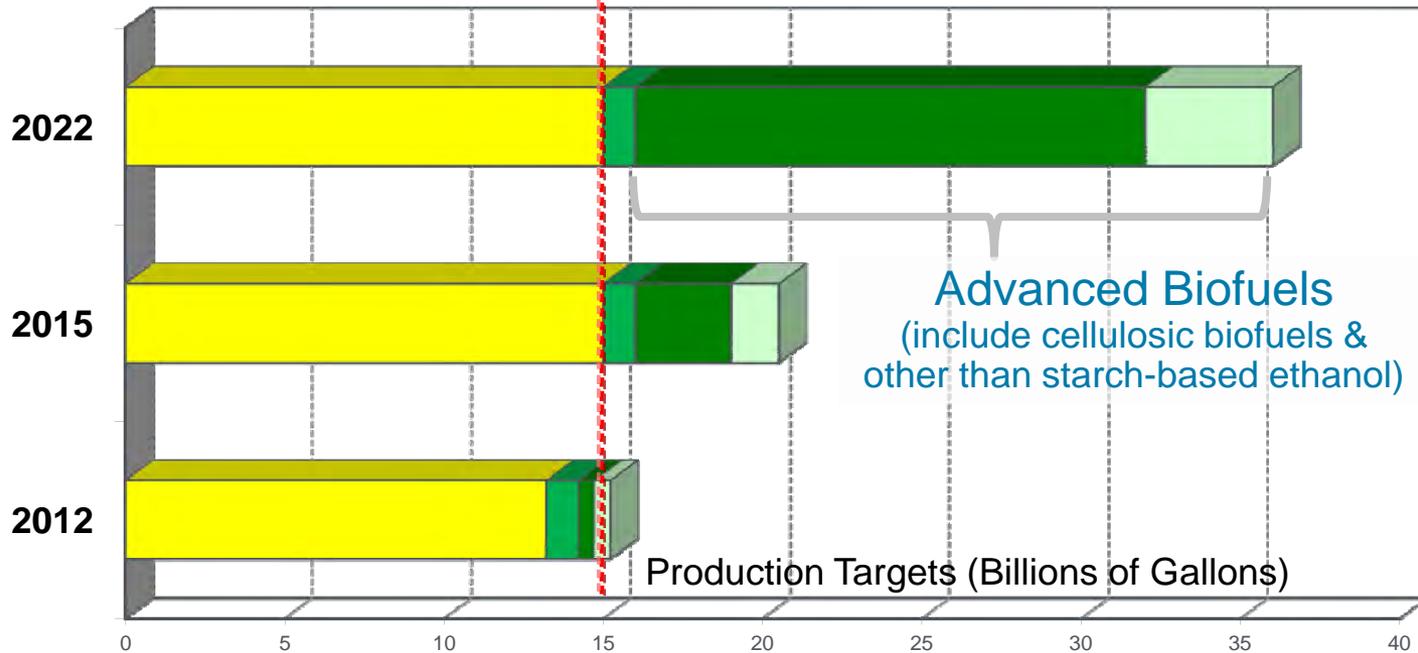
Life-Cycle Carbon Emissions for Various Transportation Fuels



CTL = coal to liquids, CCS = carbon capture and storage, BTL = biomass to liquids, CBTL = coal and biomass to liquids

Renewable Fuel Standard

*15 BGY Cap
Conventional Renewable Fuel
(Corn Ethanol)*



Renewable Fuel Standard (RFS2)



Conventional (Starch) Biofuels



Biomass-based diesel

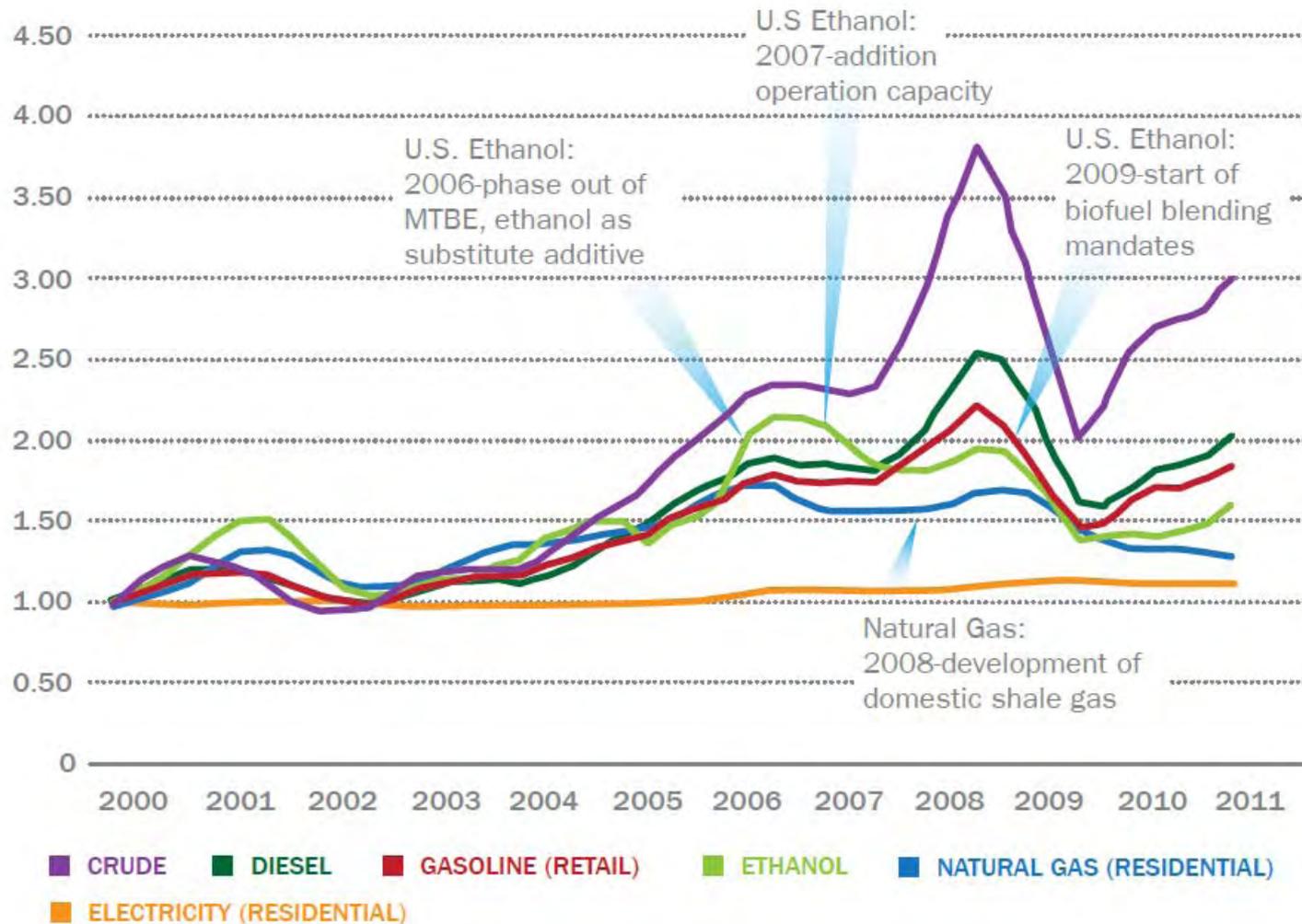


Cellulosic Biofuels

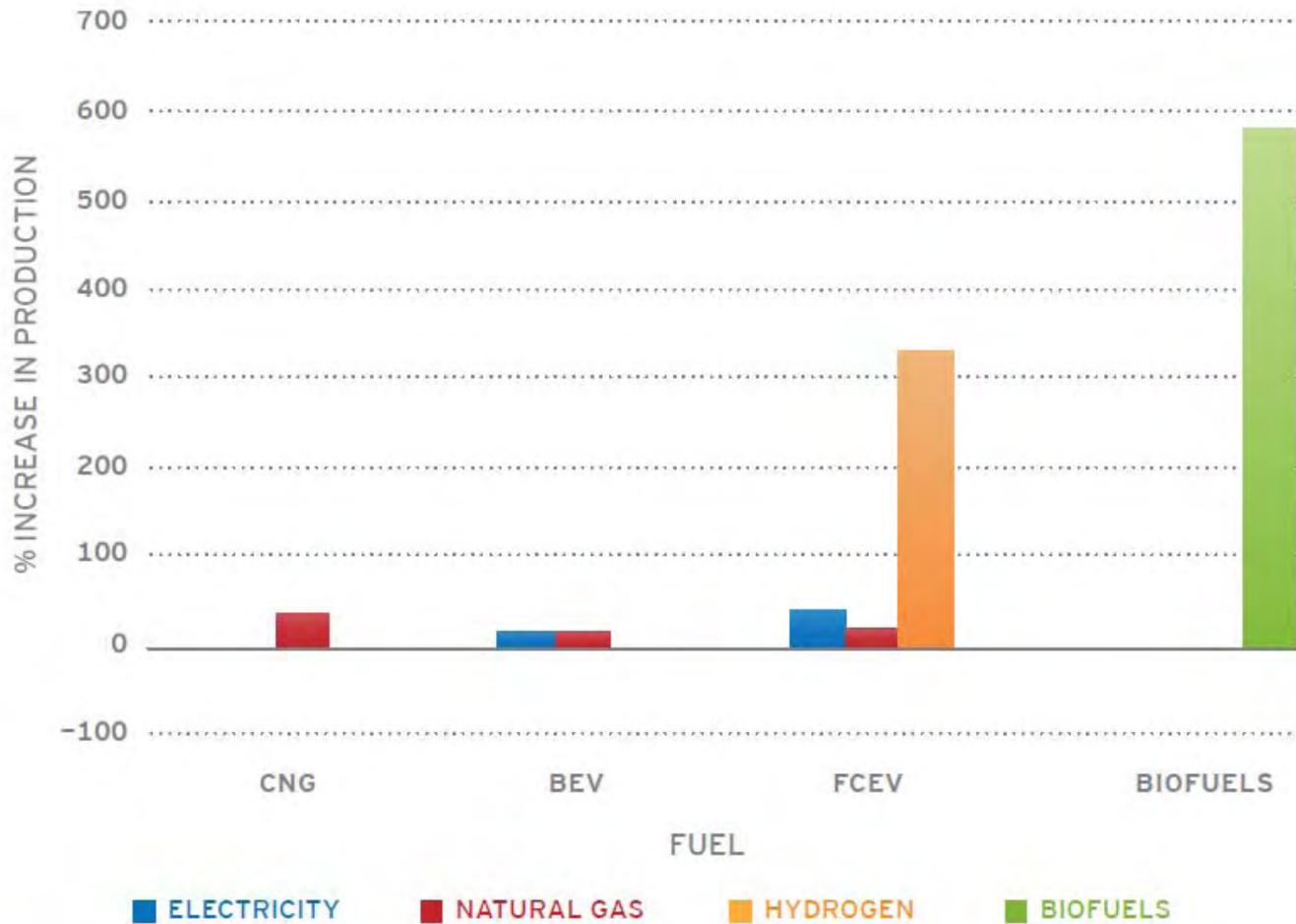


Other Advanced Biofuels

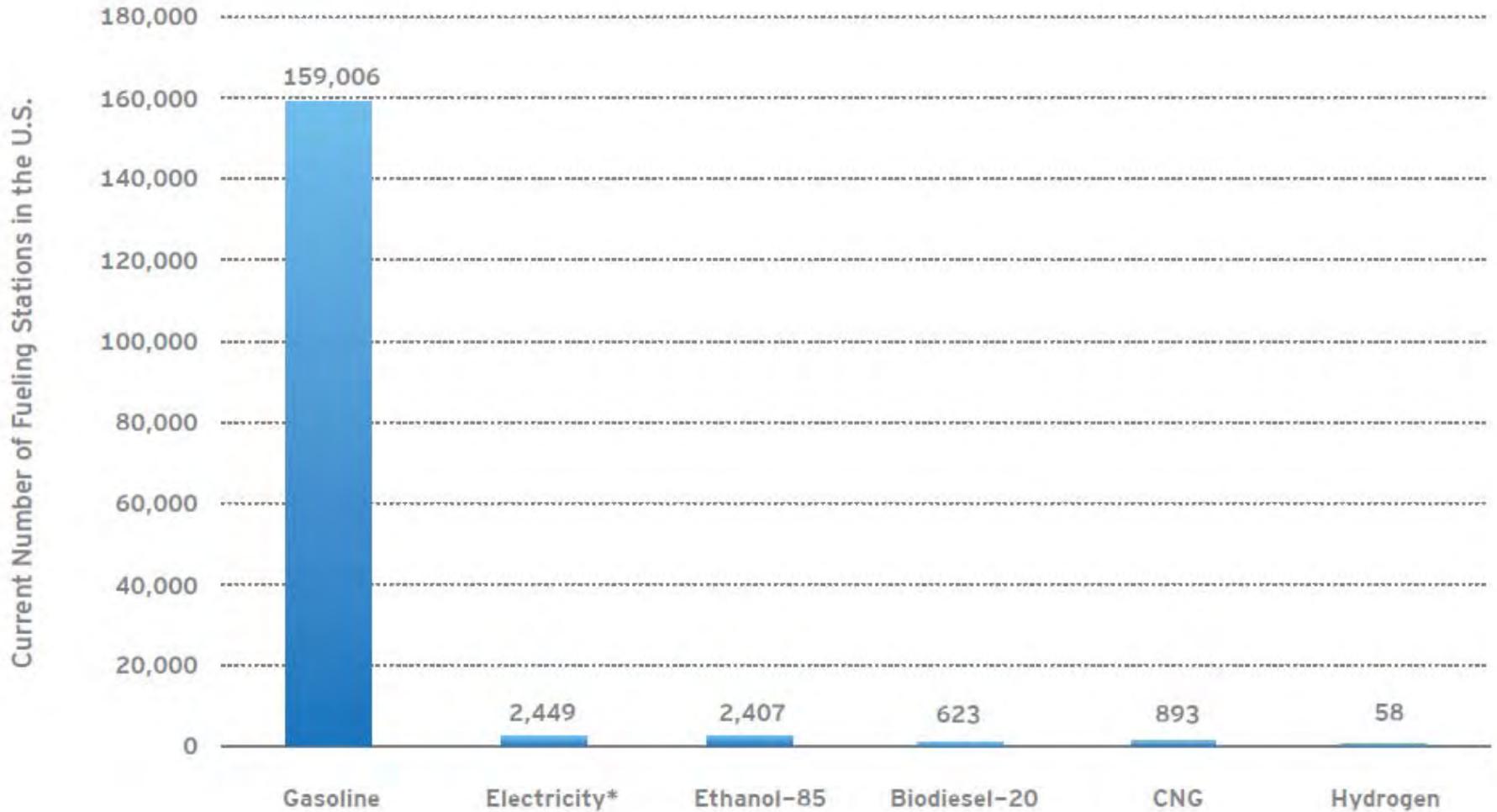
Relation of Fuel Prices to Crude Oil Price, 2000–2011



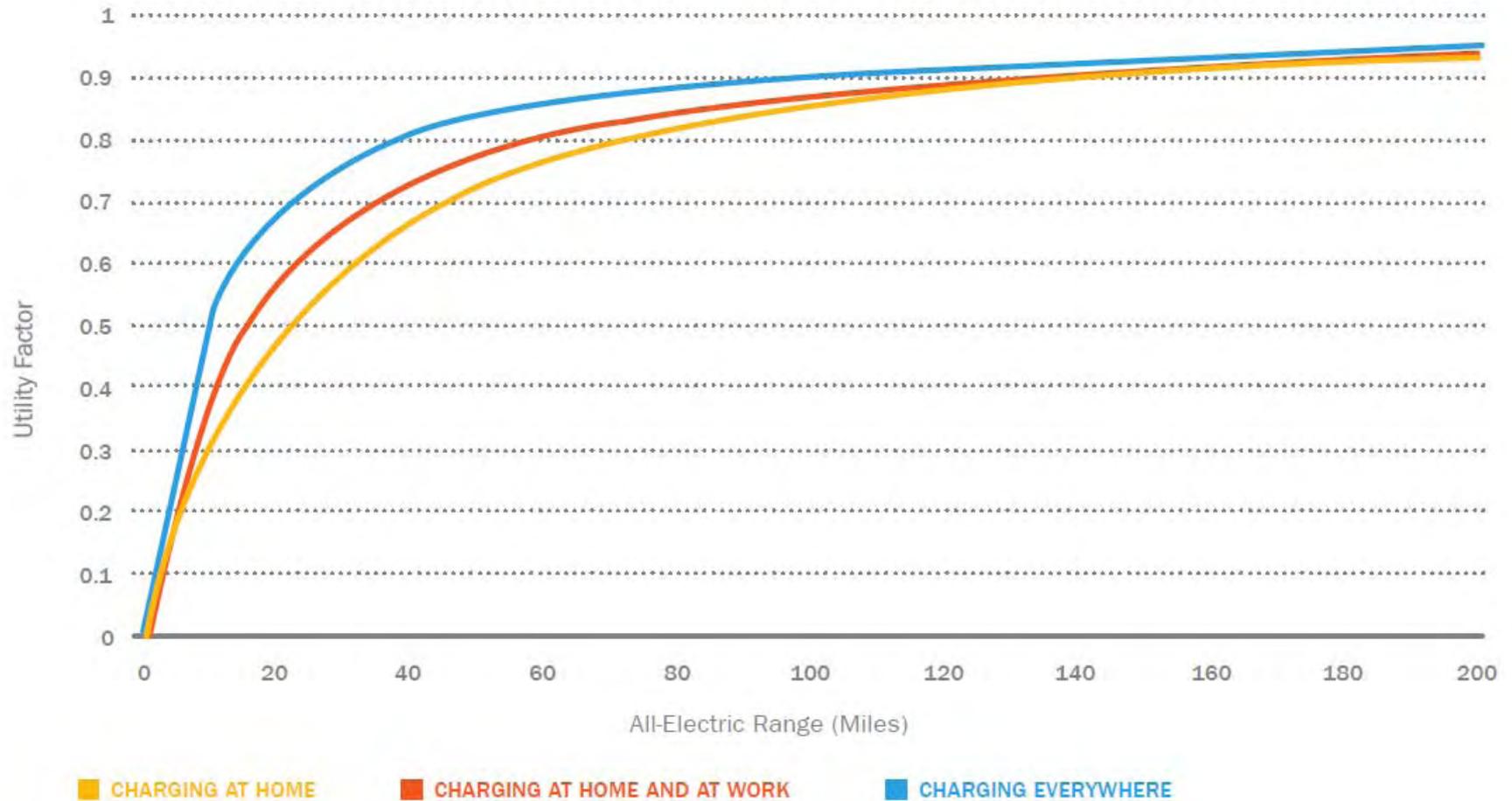
Estimated Supply Impacts of Meeting 50% of Today's LDV Demand by Various Alternative Fuels



Current Fueling Stations in the United States

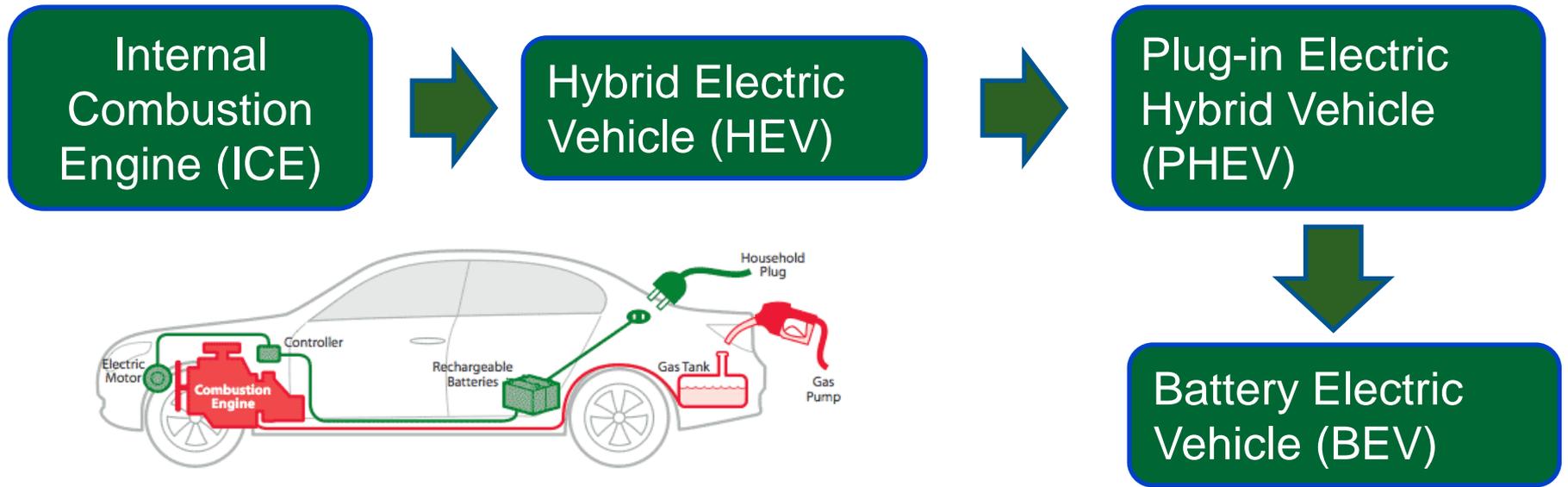


Impacts of Plug-In Electric Range and Charging Infrastructure



From a forthcoming Electric Power Research Institute report, “Understanding the Effects and Infrastructure Needs of Plug-In Electric Vehicle (PEV) Charging.”

Progressive Electrification of the Light-Duty Fleet



Challenges with Batteries and Motors

Batteries
<ul style="list-style-type: none">• Cost• Performance• Physical Characteristics

Adequate supply chain
<ul style="list-style-type: none">• Rare-earth elements in permanent magnet motors• Lithium in batteries• OEM & component manufacturing capacity

Charging
<ul style="list-style-type: none">• Infrastructure• Standardization of chargers and grid interface• Charging times• Consumer behavior

Oil Strategy Scorecard

	Security	Trade	Price	GHGs
Efficiency	✓	✓	✓	✓
“Drop ins”				
Oil	✓	✓	x	x
XTL	✓	✓	x	x?
Biofuels	✓	✓	x	?
“Drop outs”				
CNG	✓	✓	✓	x
H2	✓	✓	✓	?
Electricity	✓	✓	✓	✓

Vehicles and their fuels are only part of a larger transportation system

- Vehicles / fuels / fueling infrastructure
- Traffic management
- Roads / parking
- Public transport
- Urban planning
- Behavior



Report on the First

Quadrennial Technology Review

Report DOE/S-0001

National Defense University Energy as a Grand Strategy

Strategy/Policy Exercise:

Sheila R. Ronis, Ph.D.
Walsh College

7-8 May 2012

National Defense University

Energy as a Grand Strategy

Agenda

- System Draw – The U.S. Energy System
- SWOT Analysis
- Headline Exercise
- Setting Goals
- Developing Strategies, Tasks and Responsibilities

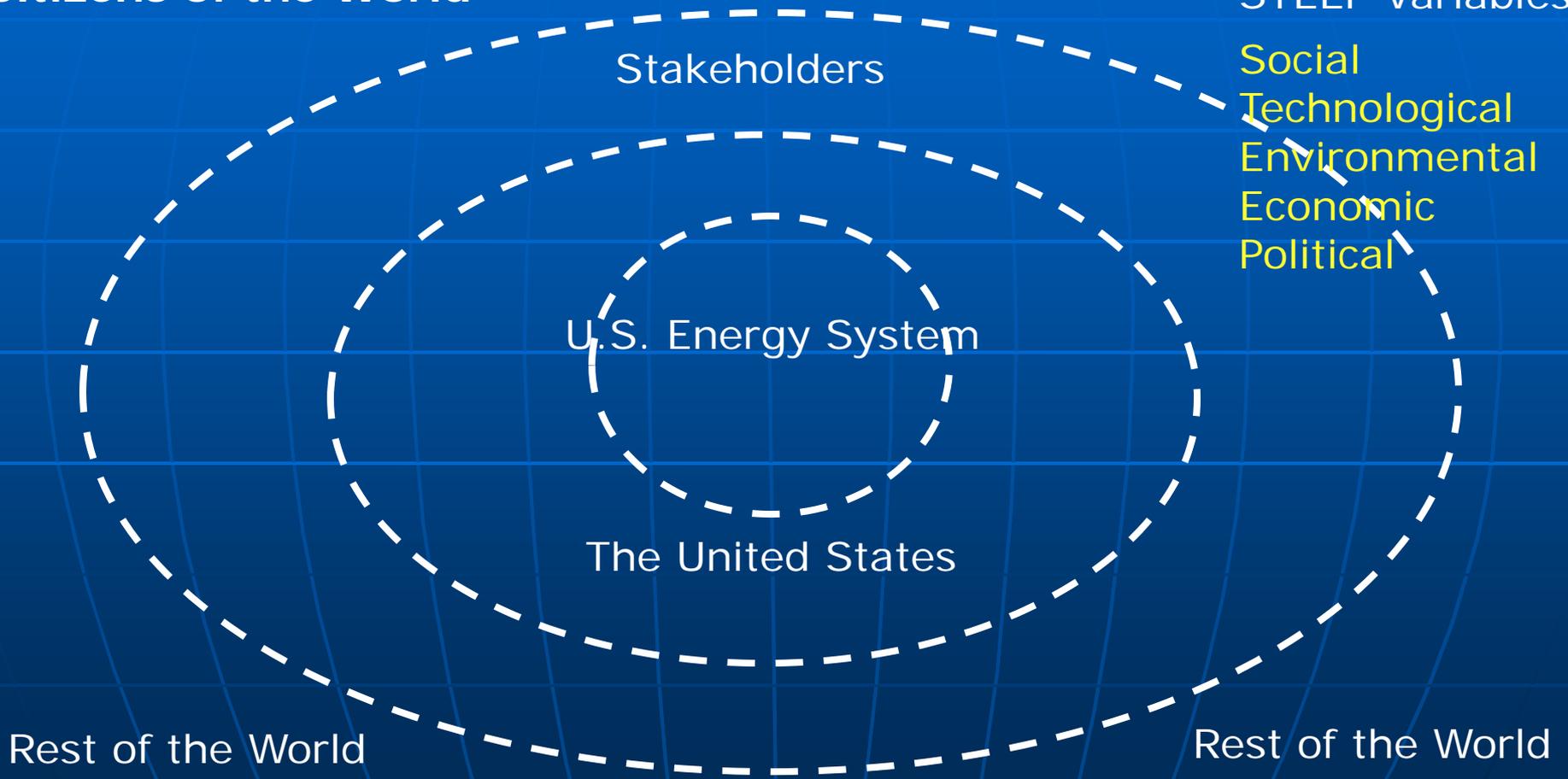
The U.S. Energy System

The System Draw

"Citizens of the World"

STEEP Variables

Social
Technological
Environmental
Economic
Political



Energy as a Grand Strategy

The System Draw

Internal Variables	External Variables	The U.S. Energy Stakeholders

Energy as a Grand Strategy

SWOT Analysis

- *Strengths*
- *Weaknesses*
- *Opportunities*
- *Threats*

Energy as a Grand Strategy

The Headline Exercise

- The Year is 2024. The U.S. Energy Strategy has done very well over the last 10 years. Many of the goals set in 2014 have been achieved.
- You are writing a story for the wiki *energy newsletter* to let everyone know of the good news. The year is 2024. Write the headline and the story behind it. Your deadline is in 20 minutes. Go!

Original Assumptions in Sheila's Scenario

- Distributed networks and energy grids are part of the answer
- There is no single "silver bullet"... many sources of energy need to be developed and used
- Moving away from fossil fuels is a positive move

Potential Headlines

- U.S. redesigns its entire energy grid for robustness: distributed alternative energy reigns supreme
- Secretary General of United Nations Recommends All Countries Emulate the U.S. Approach to Energy Distribution
- On World Peace Mission Secretary of State Encourages Energy Distribution Strategies for Developing Nations
- Research Experiment in Space Yields Great Results as Solar Energy is Collected by Satellite and Beamed to U.S.

Energy as a Grand Strategy

Goal Setting

- What assumptions did you make in 2024? What goals did you assume had been reached?
- What goals should the U.S. set for the next three years to achieve its goals in 2024?

Energy as a Grand Strategy

Developing Strategies, Tasks and Responsibilities

- Strategies - *How we will achieve our goals*
- Tasks - *What needs to be done*
- Responsibilities - *Who will do what*

Energy as a Grand Strategy

Timelines into the future.

- On your sheet of paper draw a timeline between today and 2024.
- Put your assumptions in the 2024 place on your timeline.
- Identify what goals were achieved in 2024.
- What steps and in what order have to be accomplished for the goal to be achieved between today and 2024.

Energy as a Grand Strategy Visioning...

- Planning Tool, Systems Thinking Process
- Developed After WW II by Rand Corp
- Use at Pentagon and State Dept
- Scenarios to learn and think about events that can occur in the future
- Testing assumptions about the future?

Energy as Grand Strategy

"We are like tenant farmers chopping down the fence around our house for fuel when we should be using Nature's inexhaustible sources of energy--sun, wind and tide. I'd put my money on the sun and solar energy. What a source of power! I hope we don't have to wait until oil and coal run out before we tackle that."

Thomas Edison to Henry Ford and Harvey Firestone (1931)

Energy as Grand Strategy

Chief Seattle, a leader of the Native American Suquamish Tribe who warned the white man:

"Teach your children what we have taught ours, that the earth is our mother. Whatever befalls the earth befalls the sons of the earth. The earth does not belong to man; man belongs to the earth. Man did not weave the web of life; he is merely a strand in it. We do not inherit the earth from our ancestors; we borrow it from our children."

<http://www.suquamish.nsn.us/>

What's so wicked about 'energy'?

R. Rosner/EPIC-Univ. of Chicago

- We know that the long-term complexion of our Nation's energy system must change ...
- ... and we know that we can't do without a well-functioning energy system ...
- Experience has taught is that such change is difficult – and the reasons are 3-fold ...
 - **Energy system scale and complexity ...**
 - **Energy system time constant ...**
 - **Energy system vested interests ...**

Variations

... we can't do without it

- ... because everything depends on it
- Consider R.E. Smalley's view of 'Humanity's Top Ten Problems for the next 50 years ...

1. ENERGY

2. WATER

3. FOOD

4. ENVIRONMENT

5. POVERTY

6. TERRORISM & WAR

7. DISEASE

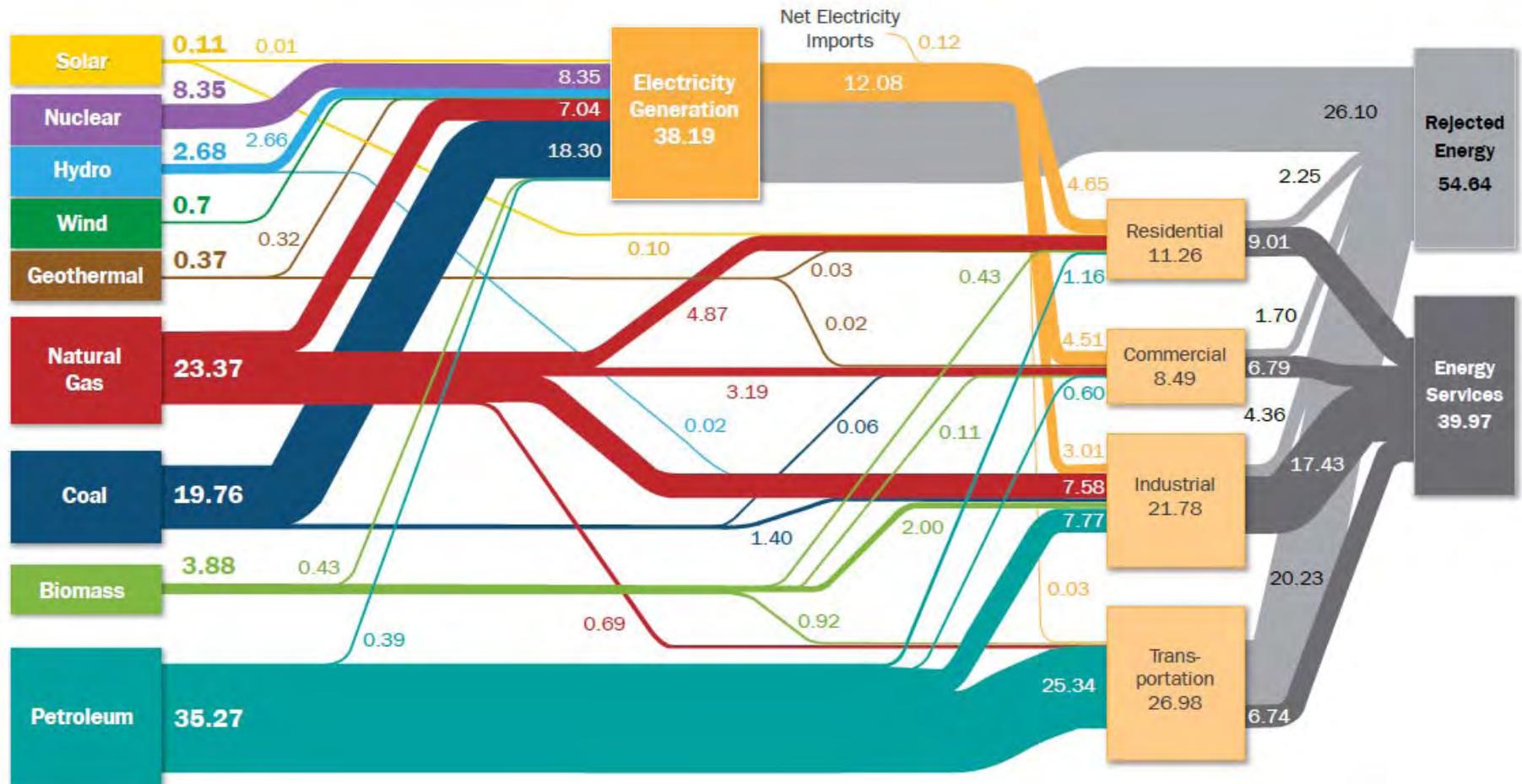
8. EDUCATION

9. DEMOCRACY

10. POPULATION



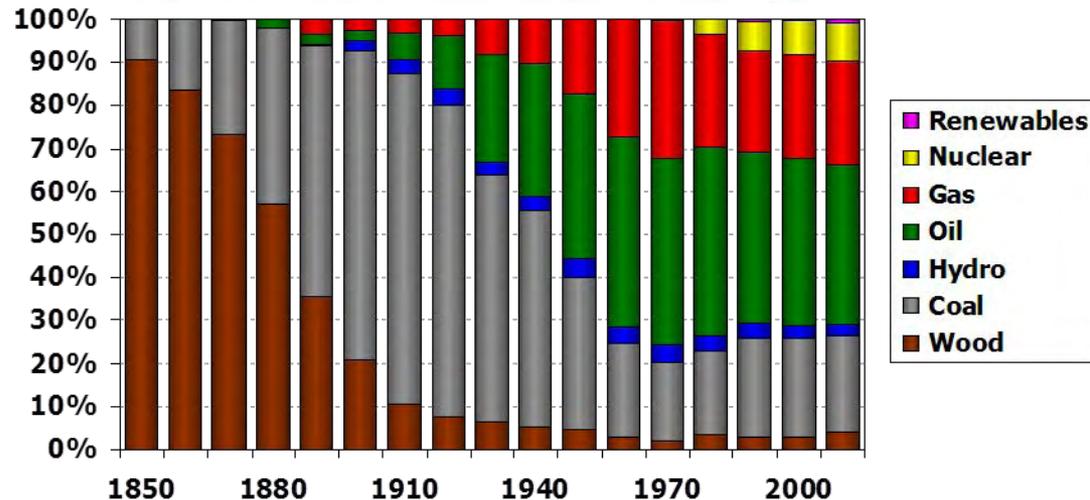
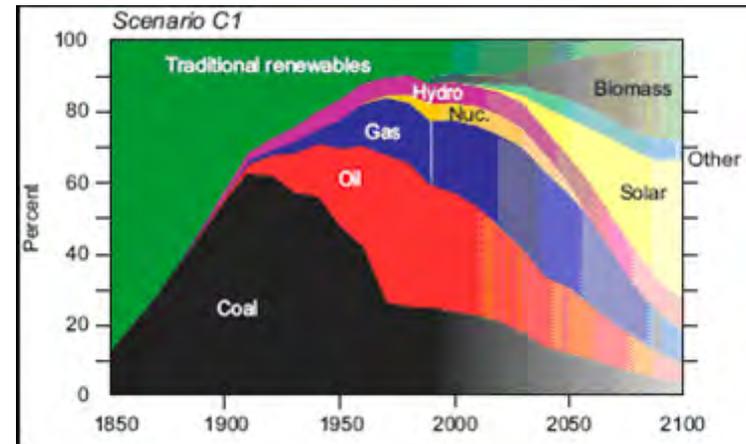
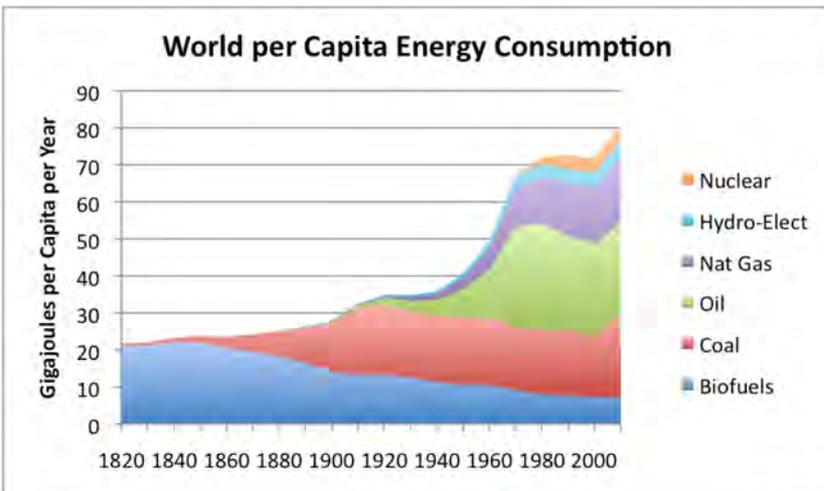
The complexity and scale ...



- *Source:* Lawrence Livermore National Laboratory (2009)
- #s all in 'quads'
- 1 quad $\sim 10^{15}$ BTU $\sim 1.055 \times 10^{18}$ joules (~ 1 exajoule)

The time constant ...

Here's how the U.S. energy system has evolved over the past ~2 centuries ...



- The fundamental time constant seems to be ~40 years

The vested interests ...

- Energy markets – for both base power and transport – are totally dominated by fossil fuels ...
- This fact, plus the scale of the energy system, means that the players are financially – and therefore politically – powerful ...
 - ... and they will tend to resist changes in the energy system that weakens their market power ...

So, what can we do?

- The energy system scale and complexity is the *inherent* reason that the energy system time constant is so long ...
 - This reflects fundamentals in both science/engineering and economics.
 - Thus, energy system scale, complexity and time constants are **NOT** problems – but ‘facts of life’ we must accept and learn to deal with.
- Because we can’t do without energy, possible threats to the existing order – no matter how unlikely – must be hedged ...
 - The level of ‘insurance’ will depend on one’s risk tolerance ...
 - ***Even the ‘vested interests’ will need to hedge ...***
 - ***And that provides the opportunity to engage the ‘vested interests’ in evolving our energy system ...***

Exceptional service in the national interest



Panel: Science and Technology's Role
in Supporting Systems Approaches to Energy Security
May 7, 2012

Juan J. Torres
Senior Manager, Renewable Energy Technologies



Sandia National Laboratories is a multi-program laboratory managed and operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Corporation, for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000. SAND2011-2324P

Sandia has a 40+ year history in energy

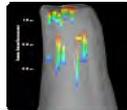


Sandia was born as a nuclear weapons engineering laboratory with deep science and engineering competencies



Energy crisis of the 1970s spawned the beginning of significant energy work

Strategic Petroleum Reserve –geological characterization of salt domes to host oil storage caverns



DOE's Tech Transfer Initiative was established by Congress in 1991



Advent Solar

Energy Policy Act of 2005

Combustions Research Facility (CRF) & Cummins partner on their newest diesel engine



Joint BioEnergy Institute

1950

1960

1970

1980

1990

2000

2007

2010

Vertical axis wind turbine



NRC cask certification studies & core melt studies

Solar Tower opens



CRF opens to researchers



Power grid reliability study



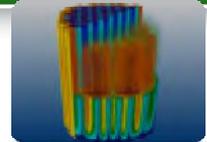
Large-scale pool fire tests of liquefied natural gas (LNG) on water



Sunshine to Petrol Pilot Test



Consortium for Advanced Simulation of Light Water Reactors (CASL)



Climate study uncertainties to economies



Our core NW competencies enabled us to take on additional large national security challenges

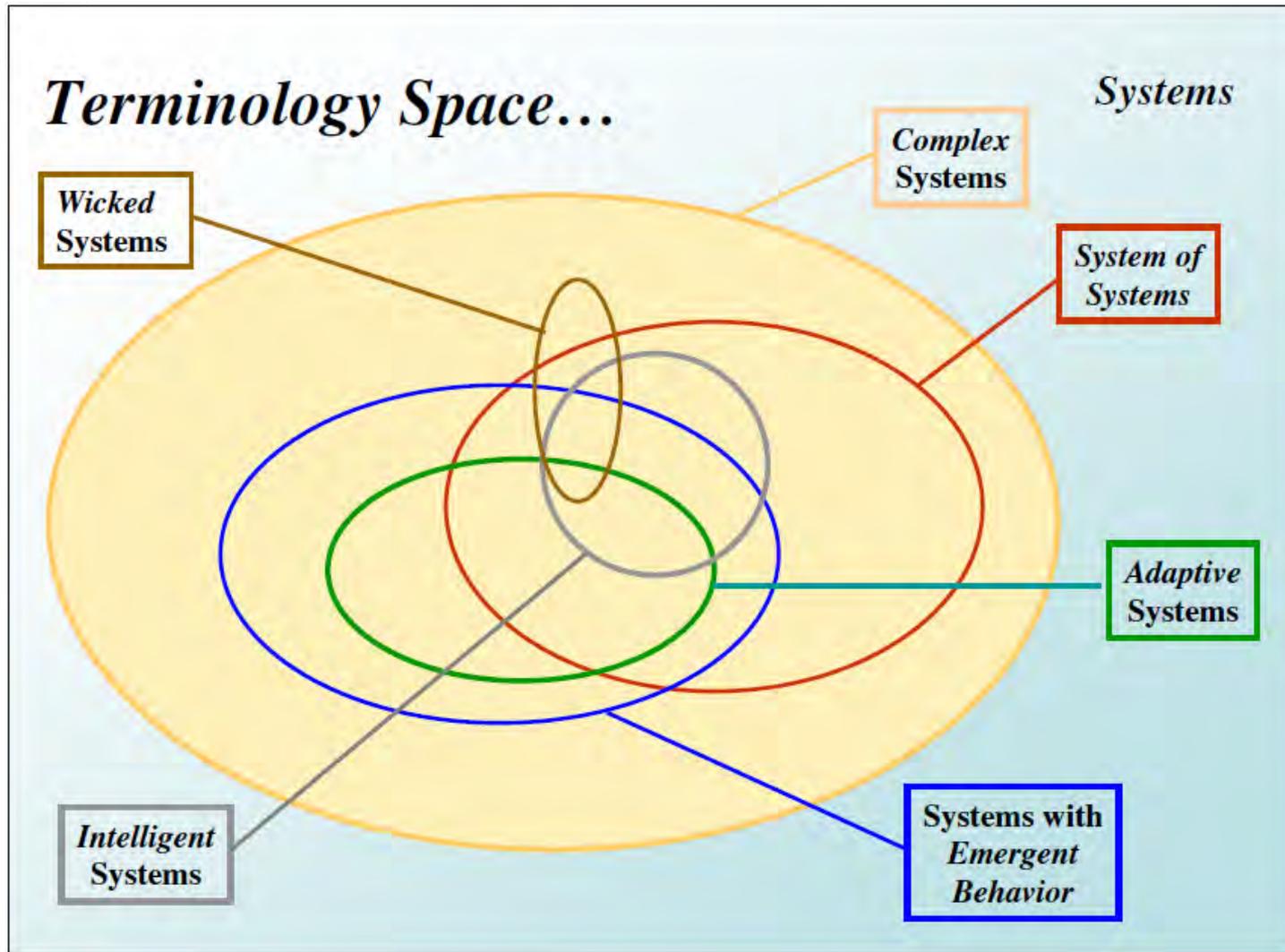


Distributed Energy Technology Laboratory (DETL) to integrate emerging energy technologies into new and existing electricity infrastructures



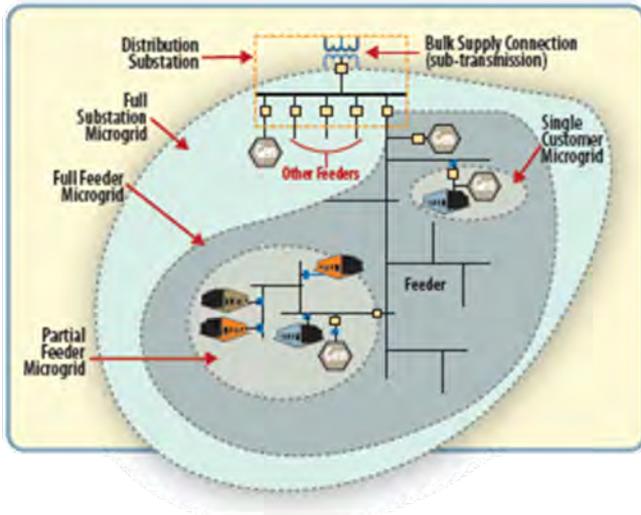
Combustion Research Computation and Visualization (CRCV) opens

The Systems Space

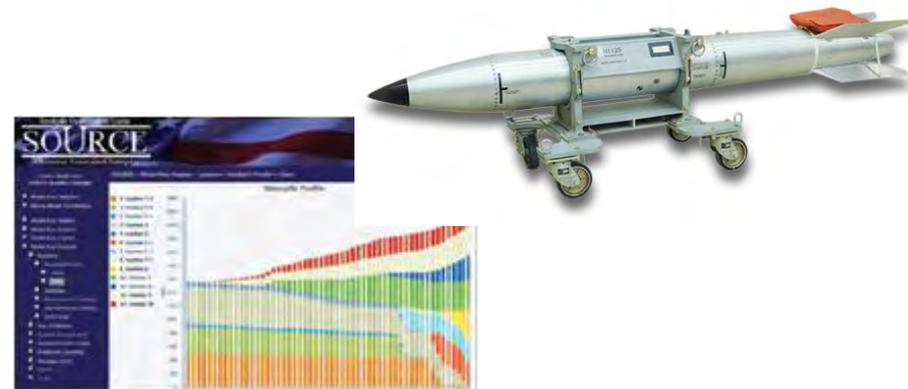


Source: Engi, Dennis. "Complex Systems: A Panel Discussion, One Sandian's Perspective", Jan 2007.

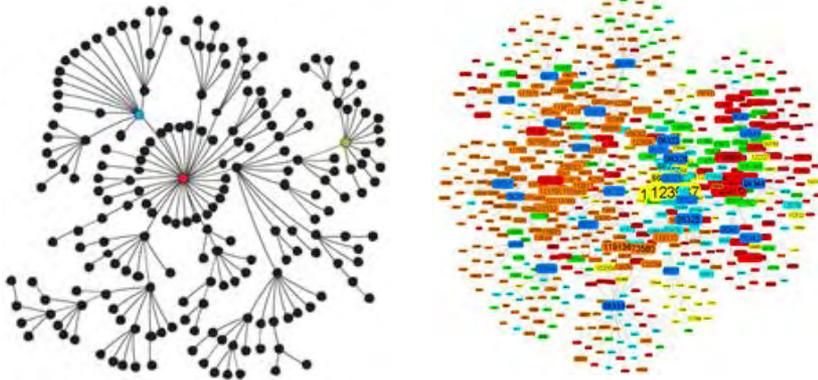
Examples of Sandia's Work on National Security Systems Challenges



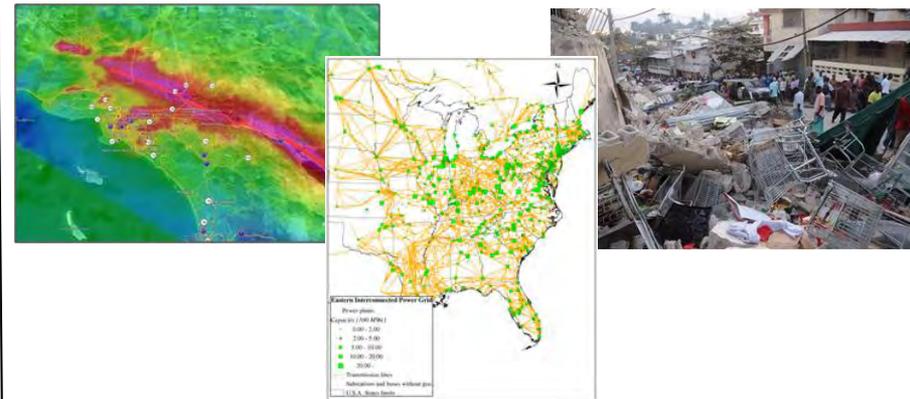
Energy: Secure, Scalable Microgrids



Nuclear Weapons: Enterprise Modeling



Defense: Terrorist Networks and Opinion Dynamics



Homeland Security: Interdependent National Infrastructures

Energy Surety

Energy Surety Elements	
Safety	Safely supplies energy to end user
Security	Maintains power in a malevolent environment
Reliability	Maintains power when and where needed
Sustainability	It can be maintained for mission duration
Cost Effectiveness	Produces energy at lowest predictable cost

A framework for improving mission readiness

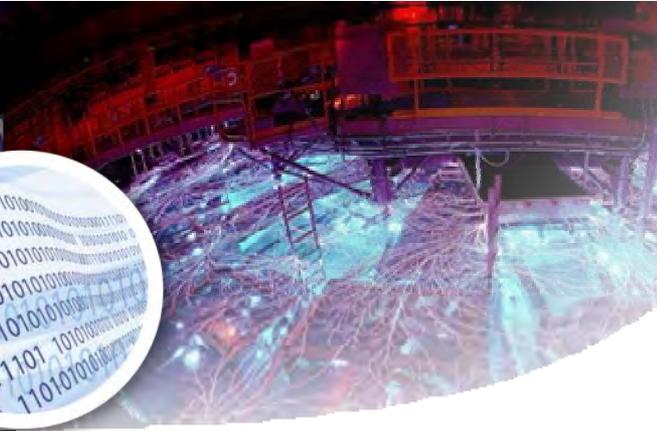
Thank you

Strong Research Foundations Enable Mission Performance

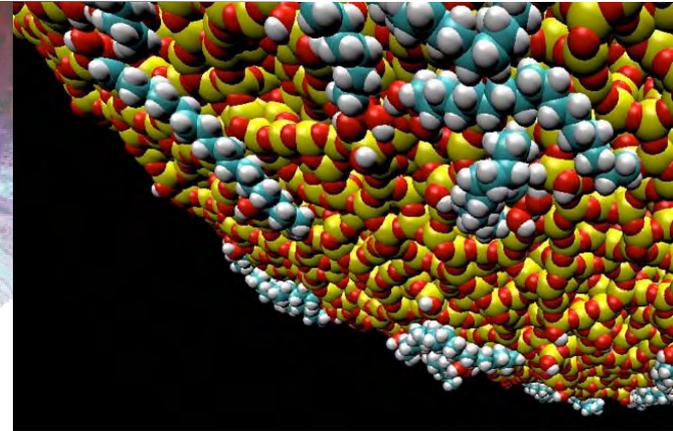
Computing and Information Sciences



Radiation Effects and High Energy Density Science

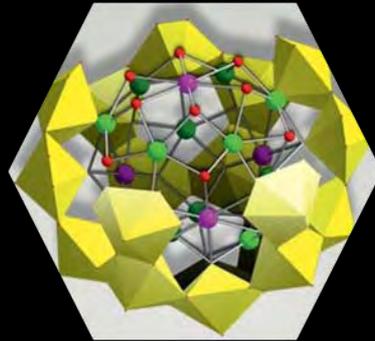
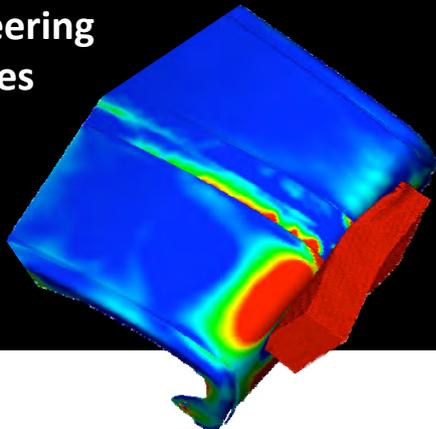


Materials Science

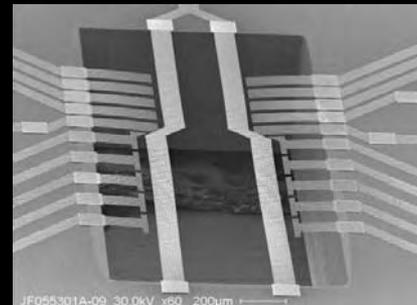


Nanodevices and Microsystems

Engineering Sciences



Geoscience



Bioscience

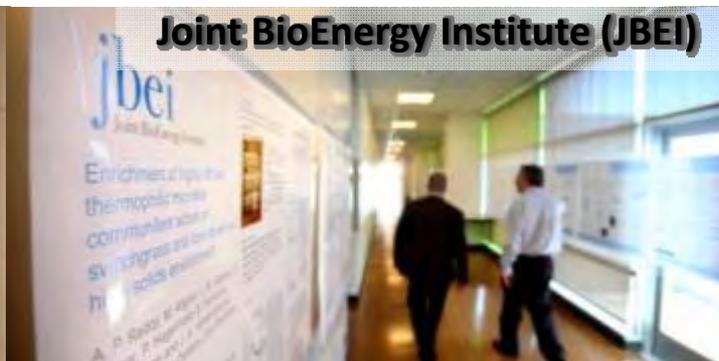


Foundational Facilities – DOE Investments

Supervisory Control & Data Acquisition (SCADA) Test Bed



Joint BioEnergy Institute (JBEI)



National Solar Thermal Test Facility

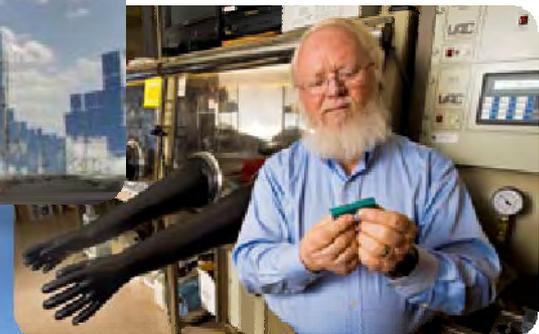


Combustion Research Facility (CRF)



Distributed Energy Technologies Laboratory (DETL)

Center for Integrated Nanotechnologies (CINT)



Battery Abuse Testing Laboratory (BATLab)

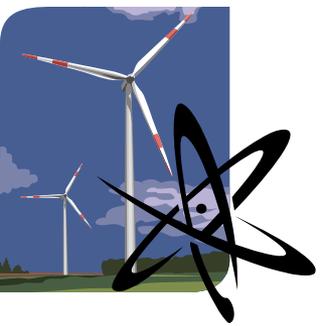
Foundational Facilities (Continued)



**Red Sky
High Performance Computing**



**Microsystems and Engineering Sciences
Application (MESA) facility**



The Energy Security System as a Wicked Problem

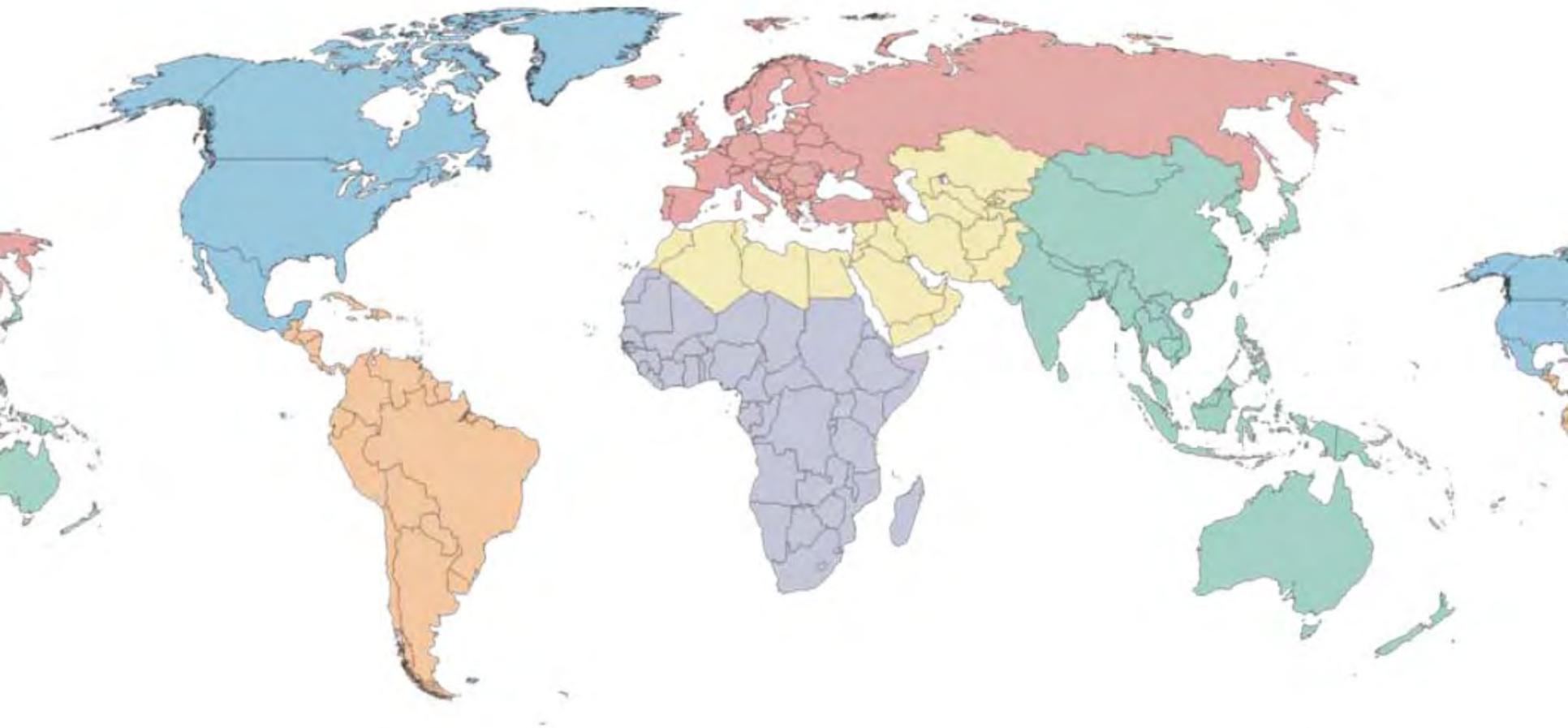
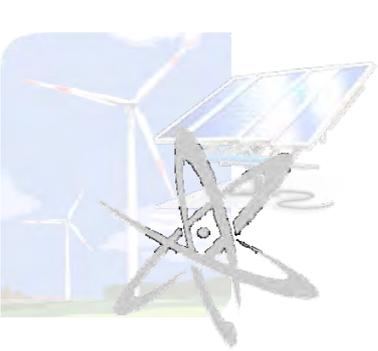
Conference on Energy Security as a Grand Strategy

7-8 May 2012

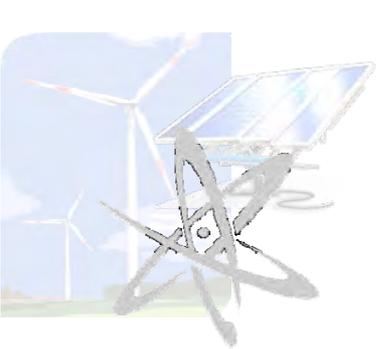


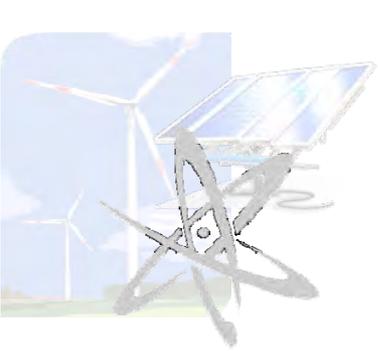
With thanks to Neil Hersey, Neil Allen, Tony Haught

Context Matters



Context Matters





U.S. Energy Security System



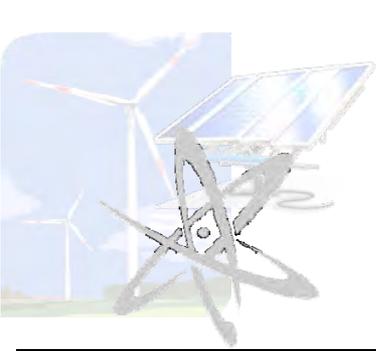
An agile, resilient, global network to provide key customers with reliable energy and suppliers with adequate compensation, taking in account realistic costs

- Many diverse, interdependent elements, such as: Domestic and international policies and politics, economics, military capabilities, science & technology, environmental issues, competing demands, plus human social/cultural values and behaviors

System must be able to:

- Protect the entire energy supply chain and infrastructure (foreign and domestic)
- Minimize disruptions of energy supplies, should protection fail
- Develop and implement policies to help transform U.S. energy demand and distribution to a sustainable, 21st Century model
- Incentivize conservation and other responsible energy behavior
- Identify those organizations (public and private) that are best suited to making decisions and taking actions
- Challenge the underlying assumptions on which decisions have been made to see if they remain valid. How often should they be re-examined?

Environment Complex and Dynamic*



- Simple problems can be managed by one agency with limited oversight
- Complex problems require multiple departments and agencies and intensive oversight



Figure Three- Cynefin: Decision Making

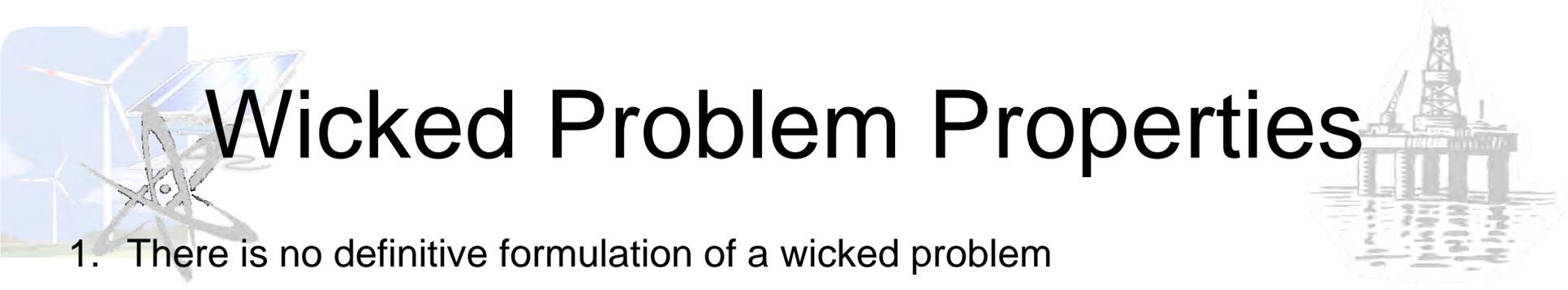
Complex
Pattern management
Matriarchal/Patriarchal leadership
Probe, Sense, Respond

Knowable
Analytical/Reductionist
Oligarchic leadership
Sense and Respond

Chaos
Turbulent and unconnected
Charismatic or tyrannical leadership
Act, Sense, Respond

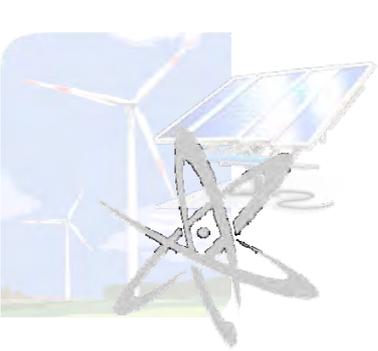
Known
Legitimate best practice
Feudal leadership
Categorise and respond

* http://www.cognitive-edge.com/ceresources/articles/13_Complex_Acts_of_Knowing_paradox_and_descriptive_self-awareness.pdf



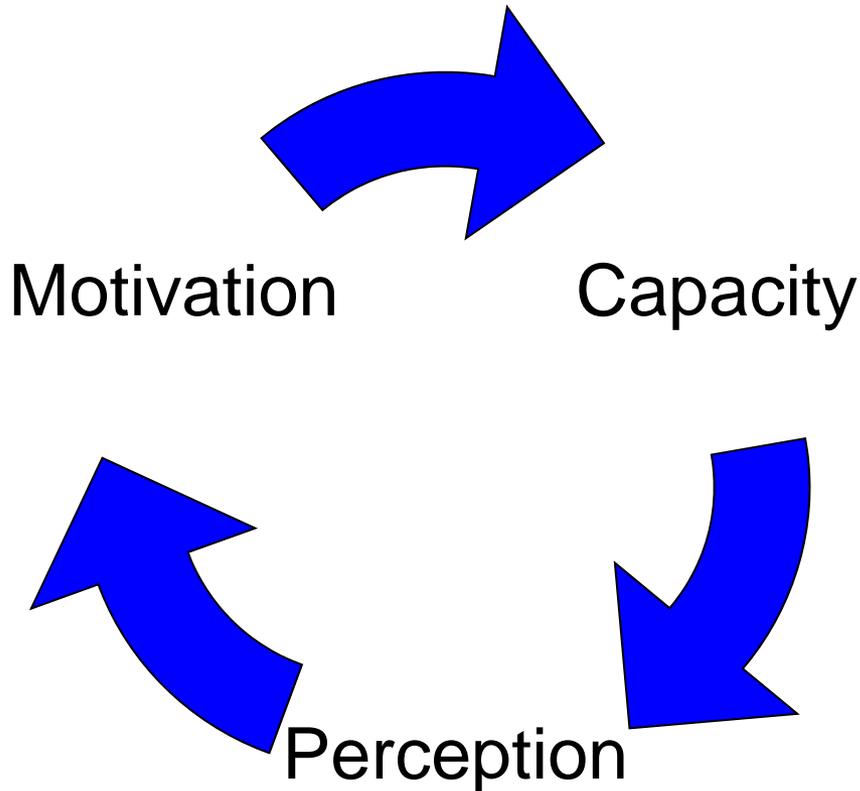
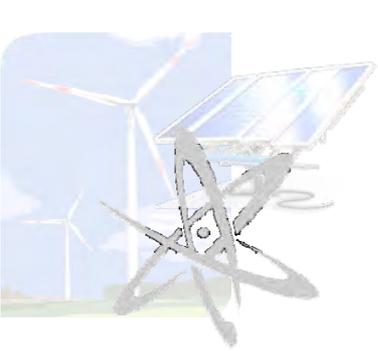
Wicked Problem Properties

1. There is no definitive formulation of a wicked problem
2. Wicked problems have no stopping rule
3. Solutions to wicked problems are not true or false, but good or bad
4. There is no ultimate test of a solution to a wicked problem.
5. Every solution to a wicked problem is a “one-shot” operation; because there is no opportunity to learn by trial and error, every attempt accounts significantly.
6. Wicked problems do not have an exhaustively describable set of potential solutions, nor is there a well-described set of permissible operations that may be incorporated into the plan.
7. Every wicked problem is essentially unique.
8. Every wicked problem can be considered a symptom of another problem.
9. **The problem has multiple stakeholders.**
10. The planner has no right to be wrong.
11. The existence of a discrepancy representing a wicked problem can be explained in numerous ways.



Elements of a Wicked Problem: Multiple Stake Holders

Multiple Stake Holders *Considerations*



Source: Julia R. Kotzebue, Hans Th. A. Bressers, Charles Yousif. Spatial Misfits in a Multi-Level Renewable Energy Policy Implementation Process on the Small Island State of Malta, 10 Institute for Sustainable Energy, University of Malta, Malta, May 2010.

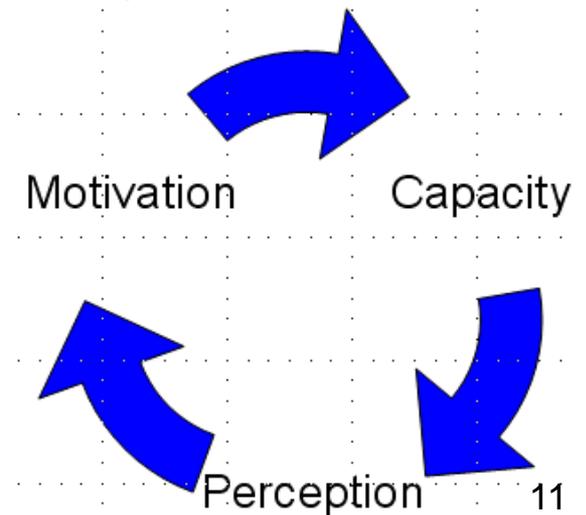


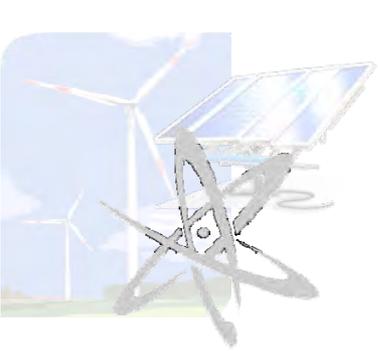
Multiple Stake Holders *Considerations*



Economic / Environmental

- Government
 - Executive (President, DOE, DOT, DOD, etc.)
 - Legislative (Congress)
- Private industry (Supporting / Supported)
- Special Interests (Oil, Environment)
- Energy Producers (Domestic & International)
- Americans (Current & Future)
 - Fisheries
 - Tourism, Recreation
 - Air/Seaways...new obstructions / restrictions
 - Aesthetics
- International Community (Suppliers/Consumers)
- NGOs (Environmental, Renewable Energy)
- Local States/Counties/Cities
- Job Market / Employment



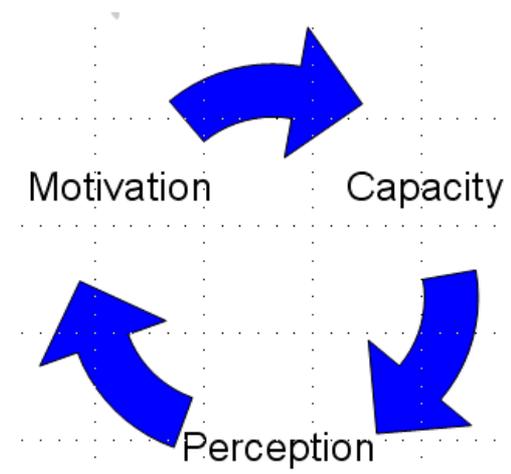


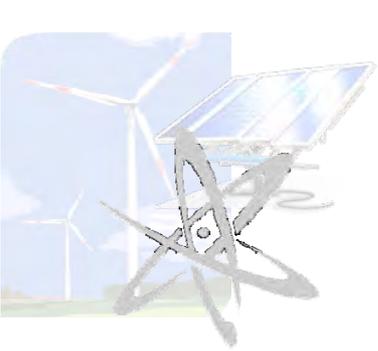
Multiple Stake Holders

Key Take Aways



1. 'Solution' will not please everyone...strive for least regrets (but to who?)
2. Incentives are preferable to disruptive shocks
3. Engage business, government, civil society
4. Conditioning 'losers' must be persistent, consistent, long-term (who will 'losers' be?)
5. Do what's right. Assume good intent—trust but verify





Key Points



- Energy is a significant problem for national and global security
- Global environmental concerns are increasing
- DOD energy policies can have great impacts on global audiences
- Some policies could be self-defeating
- Transition to alternate and cleaner fuels will eventually happen, but sooner likely is better
- Large scale solutions take decades to develop, test, market
- “Anticipatory Governance” will be needed



Coping with Wicked Problems (1)



Coping Strategies (Nancy Roberts of NPS)

- Authoritarian
- Competitive
- Collaborative

Success Stories

- Post-War Reconstruction of Western Europe (different era)
- Balancing the Federal Budget in 1990s
- Corporate examples: PPG

Platitudes and general solutions will never be enough. Success requires:

- Frequent examinations of underlying assumptions
- Management of a wide range of relationships
- Attention to stakeholder attitudes
- All may change over time
 - Keep “Courses of Action” (COAs) B, C and D available as “branch” concepts in case COA A doesn’t work out as expected.

Successful approaches are likely to be comprehensive, reinforcing and iterative



Coping with Wicked Problems (2)

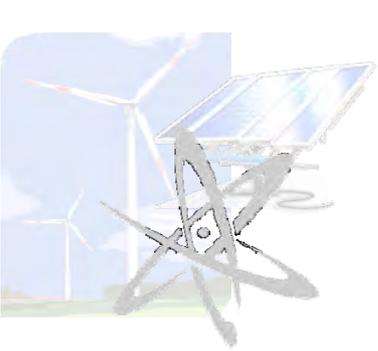


Other examples:

- Australian government's paper on [Tackling Wicked Problems: A Public Policy Perspective](#)
 - “There is no quick fix for wicked policy problems, no glib formula about “Seven Steps to Crush Social Complexity,” or “Tame Your Way to the Top”
- Amory Lovins: *Reinventing Fire*
 - Ways to convert US to much greater use of renewable energy by 2050, at a profit, using market mechanisms
- Booz Allen executives' “Megacommunities” concept
 - 5 critical elements for engaging business, govt, civil society

TIDES has shown that technology alone is never enough: In parallel one must:

- Develop social networks and build trust;
- Link policy and doctrine to field operating procedures;
- Understand legal and regulatory constraints;
- Leverage resources; and
- Train, exercise and educate to change behaviors so that lessons can actually be learned



CAUTIONARY TALE



Thucydides writings on the Peloponnesian Wars can teach us many things, but among them are that:

- It doesn't always work out well in the end;
- Leadership really makes a difference, but there are more weaklings and charlatans than inspired leaders;
- Beware of demagogues--checks and balances are important.