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# Memorandum

From: Jay Ratafia-Brown and Alison Smith, Leidos  
To: Aloulou Fawzi, EIA  
Subject: Geopolitics, Country Risk Assessment, and Commodity Pricing Workshop Summary  
Date: July 24, 2014

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The U.S. Department of Energy’s Energy Information Administration (EIA) conducted a technical workshop on July 15, 2014, at the J.W. Marriott in Washington, D.C., after the closing of the 2014 EIA Energy Conference. The purpose of the workshop was to facilitate discussion about approaches for measuring energy risk and perspectives on how these risks play into pricing energy commodities at the global level. The knowledge gained from the presentations and discussion provides EIA modelers with a conceptual framework for representing noneconomic (or “above-ground”) factors in the Global Hydrocarbon Supply Model (GHySMo). GHySMo will represent the global production, processing, transport, distribution, and storage of natural gas and liquid fuels within the World Energy Projection System Plus (WEPS+) model.

Workshop participation was by invitation only, with the first session focused on measuring energy risk and the second on pricing energy commodities. Each session had a moderator and two (session one) or three (session two) speakers. The speakers’ presentations may be viewed at <http://www.eia.gov/forecasts/documentation/workshops/>. The last presentation of each session was followed by comments or questions from workshop attendees, facilitated by the respective moderator. This document provides a summary of significant points made during the workshop regarding *measuring energy risk and pricing energy commodities*. Approximately 100 people participated in the workshop. The workshop agenda is provided in Attachment A; biographies of selected participants, including many of the speakers, in Attachment B; and a listing of all participants, in Attachment C.

A synopsis of each speaker’s remarks or presentation is provided in Table 1, followed by a summary of the major themes of each session and the topics discussed during the open discussion after the presentations.

**Table 1. Workshop Presentations**

Presenter, Affiliation, Title	Synopsis
<p><b>Aloulou Fawzi</b>, Project Manager Global Hydrocarbon Supply Modeling</p> <p><i>Opening Remarks</i></p>	<p>Brief welcome and explanation of the structure of the two sessions.</p>
<p><b>Adam Sieminski</b>, EIA Administrator U.S. Energy Information Administration</p> <p><i>Introductory Remarks and Welcome to the Geopolitics, Country Risk Assessment, and Commodity Pricing Workshop</i></p>	<p>Welcome and high-level overview of shift at EIA from domestic energy focus to international energy focus, setting the stage for why EIA needs feedback from workshop participants on geopolitical factors that will affect the representation of oil and natural gas markets within GHySMo.</p>
<p><b>A. Michael Schaal</b>, Director, Office of Petroleum, Natural Gas and Biofuels Analysis U.S. Energy Information Administration</p> <p><i>Introductory Remarks and Global Hydrocarbon Supply Model Project Overview</i></p>	<p>Overview of GHySMo project and focus of workshop—measuring/modeling geopolitical risk over the long term and pricing commodities over the long term—to build on success of April workshop, which was broader in scope. Introduction of moderators, Rick Westerdale (session one) and Glen Sweetnam (session two), as visionaries who are able to work through complex issues and build consensus during the process.</p>
<p><b>Rick Westerdale</b>, Director, Public Diplomacy and Policy Analysis, Bureau of Energy Resources U.S. State Department</p> <p><i>Introduction to Session One</i></p>	<p>Introduced the new dynamic of energy associated with the U.S. shale gas boom and the increase in global demand (especially from China and India). Noted the change from four decades of energy scarcity in the United States to energy abundance, but cautioned that we need to think critically about the vulnerabilities of our position and we cannot afford to settle into energy isolation. Provided examples of geopolitical risks associated with the energy sector that cause millions of barrels of oil per day to be disrupted, for instance, the Arab spring and conflicts in Sudan/South Sudan, Libya, Iraq, and Ukraine (Crimea). Stated that energy is at the nexus of national security, economic development, and environmental responsibility. Briefly introduced two speakers of session one, Daniel Klein and Jamie Webster. Stated goal of session to help EIA develop tools (mileposts/indicators/measures) to evaluate geopolitical risk.</p>

**Daniel Klein**, President  
Twenty-First Strategies

*Measuring Energy Security Risk*

Noted four decades of U.S. political concern over energy security, mostly due to dependence on oil imports. Explained fundamentals of the many meanings of energy security and presented a working definition: “‘Energy Security’ requires a reliable supply of clean and affordable energy, consistent with domestic and international objectives and sustainability.” Explained the need for and development of an index to measure and forecast U.S. energy security risk, incorporating geopolitical, economic, reliability, and environmental risks, which form four Sub-Indexes. Defined characteristics of a good metric. Presented results of U.S. Energy Security Risk Index. Explained International Energy Security Risk Index, which measures historical energy security (cannot forecast) and ranks 25 large energy-consuming countries. Presented analysis for six major countries. Concluded with three takeaways: 1) all countries’ energy security risks are intertwined – disruptions and improvements affect consumers worldwide; 2) each country is unique in terms of their specific resources, economy, geography, etc.; and 3) policies regarding investment, energy efficiency/environmental factors, and technologies matter.

**Jamie Webster**, Director  
IHS Energy

*Methodologies for Evaluating Above Ground Risks*

Presented elements of a successful risk evaluation team, for example, one that includes a mix of senior- and junior-level staff members and in which each person’s contributions are considered. Warned against cognitive biases, explaining the dangers of the “Ikea effect” in which the person who builds a piece of furniture thinks it’s great even though it’s still subpar furniture. Set forth five types of risk factors: politics, economics, hydrocarbon sector entry, hydrocarbon sector operations, and hydrocarbon sector shocks. Explained methodology that differentiates an extrapolated future state, a projected future state (assumes policies in place now will continue), and a forecasted future state (assumes interaction of several different factors). Presented a case study for Libya in which three political scenarios and their probable effects on oil supply are quantified.

**Glen Sweetnam**, Director, African and Middle Eastern  
Affairs, Office of International Affairs  
U.S. Department of Energy

*Introduction to Session Two*

Briefly introduced theme of session two—pricing energy commodities—to be presented by three speakers whose companies publish near-term outlooks for prices. Asked, What are the other factors beyond supply?

<p><b>Bob Brackett</b>, Senior Vice President and Senior Research Analyst Sanford C. Bernstein &amp; Co</p> <p><del>The Public Equity</del> <i>My Perspective on Global Geopolitical Risk</i></p>	<p>From an Exploration and Production (E&amp;P) sector perspective, addressed four key themes: 1) how to define geopolitical risk, 2) how to assess geopolitical risk, 3) how to avoid assessing geopolitical risk, and 4) how geopolitical risk cannot be avoided.</p>
<p><b>Eric Lee</b>, Strategist, Research Division Citi Global Markets</p> <p><i>Tectonic Shifts in Global Energy Geopolitics</i></p>	<p>Explored five key topics within global geopolitics: 1) “Vox Populi” risk in developing countries, 2) “Vox Populi” risk in developed countries, 3) Russia and China’s significant effects on global energy markets, 4) U.S. hydrocarbon self-sufficiency and potential for other countries to follow suit, and 5) pressure on governments due to the shale revolution.</p>
<p><b>Paul Sankey</b>, Managing Director and Oil and Gas Analyst Wolfe Research</p> <p><i>Global Oil and Gas</i></p>	<p>From a stock analyst perspective, provided geopolitical worldview as a starting point, in which 30 years of high gross domestic product (GDP) growth up until now will be followed by 30 years of low GDP growth, and technology improvements cannot make up for low growth. Impacts of this situation will be political unrest/civil wars in developing countries, as middle class people demand political representation, and stasis and retrenchment in rich countries, both causing a low-growth world. Outlined risks to oil equities: the external risk of falling demand, safety/management risks (e.g., oil spills), and the strategy risk of price planning. Outlined risks for net asset values: market variation and company-specific risk, both external (e.g., weather, global financial crises) and internal (operational and financial management). Further defined external risks that must be accounted for (quantified as a risk discount and applied to different countries) according to the “three G’s”: geology, geography, and geopolitics.</p>
<p><b>David Daniels</b>, Chief Energy Modeler, Office of Energy Analysis Energy Information Administration</p> <p><i>Closing Remarks</i></p>	<p>Thanked speakers and participants for insight into the importance of geopolitical risk and affirmed that EIA will incorporate these complex geopolitical risk factors into GHySMo. Requested those with further comments to reach out to EIA.</p>

## Introductory Remarks

Workshop introductory remarks were provided by [Adam Sieminski](#), EIA Administrator, and [Michael Schaal](#), Director of EIA Office of Petroleum, Natural Gas and Biofuels Analysis. Sieminski's introductory remarks focused on EIA's position and goals within a changing worldwide energy market. EIA has shifted its focus from the U.S. Annual Energy Outlook to the International Energy Outlook and its goal is to create a new model that improves the representation of oil and natural gas supplies, logistics, and oil price response, incorporating a focus on the key players of China and India. The new model should be able to account for changes in supplies due to more shale oil and gas projects and policy changes in key countries. Sieminski presented an overview of world energy consumption, noting that renewables and nuclear energy are the fastest-growing sources of energy (at 22% combined in 2040) and that natural gas is projected to keep growing as a share of the world total energy consumed (at 23% in 2040 vs. 27% coal and 28% liquid fuel), partially evidenced by a snapshot of liquefaction and regasification projects in the Americas. Crude oil production outages, at about 3.3 million barrels per day, are greater today in countries that belong to the Organization of the Petroleum Exporting Countries (OPEC) than in non-OPEC countries, a problem somewhat mitigated by the tight oil boom in the United States. Integral to EIA's new international focus is a better understanding of geopolitical risks and their impacts on energy commodity pricing.

Schaal's introductory remarks focused on the immediate goals of the workshop and how knowledge from both the April and July workshops will be integrated into GHySMo.

## Session One: Measuring Energy Risk

### Presentations

The first session centered on the tenet that certain risk factors affecting the global energy market need to be identified and then quantified so that they can be used to project what we think will happen in the future. The moderator and both speakers discussed political events around the world that affect oil production, increasing energy risk. EIA must develop its own quantitative metrics or "inputs" for GHySMo that reflect variable probabilities for supply, logistics, or refining process changes or disruptions in different countries or regions of the world. The Institute for 21<sup>st</sup> Century Energy's International Energy Security Risk Index may serve as a baseline in that it tracks historical trends of 25 large energy-consuming countries that make up 80% of the world's energy demand. While Daniel Klein's discussion focused on the need for and building blocks of the U.S. and International Energy Security Risk Indexes, Jamie Webster's discussion was about the culture of a successful project team, in which both critical and out-of-the-box thinking make the difference in assessing current situations that may be volatile, such as the situation in Libya, and forecasting future situations with finesse.

## Characteristics of a Good Metric

- Sensible
- Credible – may be a problem in some parts of the world
- Transparent
- Complete – may be a problem in some parts of the world
- Forward-looking
- Updateable

## Examples of Metrics

- Security of World Natural Gas Production
- Security of World Coal Reserves
- Industrial Energy Research and Development Expenditures
- Per Capita GDP Growth
- Level of Economic Development
- Labor Unrest
- Regulatory Burden

## Discussion

***Correlation Between Risk Factors.*** During the discussion following the first session, Nasir Khilji, a U.S. Treasury economist, brought up the Human Development Index, produced by the United Nations. He questioned the number of correlations associated with the Energy Security Risk Indexes presented by Daniel Klein and stated his opinion that the number of factors should be narrowed down. Klein responded that there are correlations between many factors in the Energy Security Risk Index because the goal was to capture a broad range of influences on energy security and then weight them according to their relative importance. Rick Westerdale noted similarities in the categories of risk factors identified by both speakers and that the choice for the modeler is in the degree of granularity for each metric.

***Import Dependence.*** There was a discussion by Jamie Webster about import dependence, in which the chance of an import being disrupted is low but the impacts if it happened would be high. Imports need to be paired with an evaluation of efficiency. For example, Japan was so efficient that when the Fukushima Daiichi nuclear disaster occurred, there was no slack in energy supplies. An inefficient country has more flexibility in that respect.

***Market Stability.*** Joseph Benneche, with EIA, remarked on the challenges of taking multiple disruptions into account. Rick Westerdale stated that there is a lot of market stability in spite of these disruptions—the market can absorb these disruptions. The rule of thumb is that there is 3 to 5% spare capacity in the market. Nasir Khilji interjected that a market with high prices can be stable. Jamie Webster agreed on this point, stating that consumers want steady pricing rather than

volatility, e.g., Americans are more content with consistent \$4-per-gallon prices at the pump than fluctuating prices.

*Assessing Multiple Scenarios and the Need for Mileposts.* Jamie Webster pointed out that the process is to look at different countries like Iran, Syria, etc. individually, when in reality they are interconnected. First you must look at each scenario separately and then put them together and assign percent chances to the different scenarios. Coming up with mileposts to measure whether predictions are right or wrong is important.

*Short Versus Long Time Horizons.* Kevin Massy, of Statoil, questioned Jamie Webster about how to go beyond the short time periods IHS Energy uses to the longer timeframe EIA needs and stated that Statoil's approach is to create a narrative for the future that is laid over the status quo. Jamie Webster confirmed that IHS Energy uses a similar approach and again stressed the importance of creating mileposts to gauge performance.

*Access to Capital Markets and Resources.* To calculate oil reserves and oil production, the Freedom House data series is used to account for countries' becoming more or less free year over year. A separate calculation takes into account diversity in the market, from a perfect monopoly to a perfect market.

## Session Two: Perspectives on Pricing Energy Commodities

### Presentations

The second session centered on pricing energy commodities. Bob Brackett's definition of geopolitical risk as the probability that certain events will occur that have negative impacts on supply volumes was similar to Jamie Webster's Libya case study and Daniel Klein's weighting of risk factors within the Energy Security Risk Indexes he described, tying the first session in at the outset of the second session. In discussing how you might assess geopolitical risk, he said you need a "score," or quantitative measure; a "consequence," or result that affects your decision-making; and "probabilities," again echoing themes of the first session. He said that the beauty of the shale revolution in the United States is that E&P investors overcome growth risk. His main points on pricing were: 1) oil price drives E&P equity performance, accounting for half of share price movement and 2) oil prices strive toward long-term marginal cost, which comes out of the United States. In terms of supply and demand, he projected that global demand would grow slower than global supply out to 2020.

Eric Lee's discussion of "Vox Populi," or shifting and volatile public opinion, both in developing and industrialized countries, as being a structural geopolitical risk converged with Paul Sankey's argument about how low GDP growth globally will lead to unrest and overt violence in developing countries and stagnation in industrialized countries. Lee touched on Russia and China's huge potential to shake up the global market; the two countries' actions will affect the logistics module development in terms of shifts from seaborne transport to pipeline transport.

Lee argued that the Brent benchmark is broken, as it is being swayed. He predicted huge potential in the U.S. shale boom if other countries follow suit (perhaps making energy reforms similar to those in Mexico) and global shale resources are tapped; he predicted that a global shale boom will affect the oil market by making oil prices more stable and lower.

As stated above, Paul Sankey's economic/historical worldview meshed with Eric Lee's thoughts on public opinion. In addition, Sankey's quantification of risk discount per country and presentation of "three G's" (geologic, geographic, and geopolitical) as types of risk were reminiscent of Daniel Klein's categories of metrics and International Energy Security Risk Index country rankings.

## Discussion

***Developing a Model that Incorporates Geopolitical Factors.*** Glen Sweetnam introduced the discussion following the second session by reiterating the point of the workshop – to help EIA figure out how to develop a model that incorporates geopolitical factors as it produces an endogenous oil price. He summarized how he saw Jamie Webster's perspective—it is a human, judgmental, team exercise, Bob's Brackett's—it is not so much about geopolitics as it is about the marginal cost, which will set the price going forward, and Eric Lee's—there are five non-quantifiable factors that will be difficult to model. Michael Schaal stated that EIA's challenge is to model a structure that accounts for different types of investments coming together along with other geopolitical risk factors. Webster commented on the mechanism for forecasting long-term supply and demand, in which you start with a spreadsheet and plug in known values for companies/projects and what they are going to produce, and then extrapolate to the future, with the challenge that it is harder to account for political risk factors further and further out into the future. Brackett stated that the E&P industry is spending 100% of its cash flow if North America is the thermostat, but that the thermostat has not been tested yet. E&Ps look at the price of oil (the marginal barrel) and decide whether to drill a well. Paul Sankey stated that U.S. shale is the price floor.

***Price Control—OPEC/Saudis vs. United States.*** Nasir Khilji questioned how much money per barrel OPEC countries need to make and stated that there appears to be an agreement between the people and government of Saudi Arabia. He commented that 10 years ago, notably before the Arab spring, the Saudis got away with a lot. What about the future of OPEC? Paul Sankey stated that as long as there is some demand growth, the Saudis can set the oil price. However, Khilji disagreed, stating that the United States is actually setting the price because it is based on the marginal price. Glen Sweetnam stated that the Saudis pay very close attention to the United States. Jamie Webster stated that production in OPEC countries swings up and down, and a whole lot of nothing happens in OPEC meetings, like in Samuel Beckett's play, "Waiting for Godot."

***Pricing Geopolitical Risk Factors.*** Kevin Book of ClearView Energy said that pricing geopolitical risk factors is a fool's game, in which different factors must be taken into account,

including hard factors (i.e., supply) and soft factors (e.g., risk indices, social indices discussed in the first session). The task is to consider a set of scenarios, weight them according to their chances of occurring, and come up with a result.

***Supply and Demand.*** Bob Brackett projected that there will be a couple more years of growing, but slowing, supply growth in the United States but questioned what will happen when U.S. supply plateaus. Paul Sankey stated that oil supply is easy in some respects; the big risk is an increase in demand (driven by the Chinese). Brackett replied that figuring demand growth is simple, equating to population growth times barrels per capita; we are currently in a trend of extremely flat demand growth. Michael Schaal stated that one measure of risk is the disconnect between the supply in a given country and the demand in a given country. He also stated that there is an implicit trade growth factor in modeling prices and there would be significant ramifications if a large country increased its imports.

***What About Long-Term Prices?*** Paul Sankey stated that he assumes better technology will reel in long-term prices of oil, gas, and coal. Bob Brackett said the shale efficiency revolution is the price revolution. The biggest efficiency lever has been pulled in increasing the number of wells per rig within a context of extremely slow research and development improvements in the oil sector.

***Are we Underestimating Above-Ground Factors?*** Jim Dorian, an energy economist with U.S.G., warned against underestimating above-ground factors, such as property rights and environmental laws and regulations, and stated that carbon pricing might take hold in the future, at least in the United States.

# Attachment A: Workshop Agenda

## **Geopolitics, Country Risk Assessment and Commodity Pricing Workshop**

### **Global Hydrocarbon Supply Modeling Project**

Tuesday 15 July 2014 from 2:00 to 5:00 pm

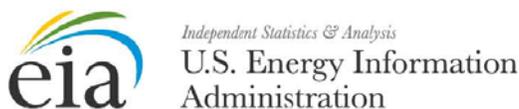
#### **Venue:**

[JW Marriott](#)

1331 Pennsylvania Avenue, NW  
Washington, DC 20004 Tel: (202) 393-2000  
Salon G in the Capitol Ballroom

- 2:00 - 2:05 Welcoming remarks, **Adam Sieminski**, Administrator, Energy Information Administration
- 2:05 – 2:10 Introduction, **Michael Schaal**, Director, Office of Petroleum, Natural Gas and Biofuels Analysis, Energy Information Administration
- Session one: Measuring Energy Risk**
- 2:15 – 3:30 Moderator: **Rick Westerdale**, Director, Public Diplomacy and Policy Analysis, Bureau of Energy Resources, U.S. State Department
- “Measuring energy security risk”, **Daniel Klein**, President, Twenty-First Strategies
- “Methodologies for evaluating above-ground risks”, **Jamie Webster**, Director, IHS Energy
- 3:30 – 3:45 Coffee break
- Session two: Perspectives on Pricing Energy Commodities**
- 3:45 – 4:50 Moderator: **Glen Sweetnam**, Director, African and Middle Eastern Affairs, Office of International Affairs, U.S. Department of Energy
- “The public equity perspective on global geopolitical risk”, **Bob Brackett**, Senior Vice President and Senior Research Analyst, Sanford C. Bernstein & Co
- “Geopolitical risk and its impact on energy commodity fundamentals and pricing”, **Eric Lee**, Strategist, Research Division, Citi Global Markets
- “Asset risking for major oil companies from a stock analyst perspective”, **Paul Sankey**, Managing Director and Oil & Gas Analyst, Wolfe Research
- 4:50 – 5:00 Closing remarks, **David Daniels**, Chief Energy Modeler, Office of Energy Analysis, Energy Information Administration

# Attachment B: Biographies



## Biographies

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### **Brackett, Bob**

Bob Brackett is the Senior Vice President and Senior Research Analyst at Sanford C. Bernstein & Co., LLC covering North American Oil & Gas Exploration & Production. Prior to joining Bernstein in 2010, Bob was Director of E&P Planning and Director of Corporate Strategy at Hess Corporation. Before Hess, he was an Engagement Manager with McKinsey & Company's Petroleum Practice, serving the world's largest oil companies across five continents and 30 countries throughout the petroleum value chain. Bob began his career with ExxonMobil, spending eight years in positions in exploration, business development, and research. As a NASA Space Grant Fellow, Bob received his PhD in Earth & Planetary Sciences from Washington University in St. Louis. He received his MBA from Rice University. He also holds a BS in Geophysics and a BA in Astronomy from the University of Texas. He is currently recognized as the No. 1 analyst in his industry by *Institutional Investor*.

### **Cisneros-Lavaller, Alberto**

Alberto Cisneros-Lavaller is currently CEO/President of Global Business Consultants (GBC) an outsourcing consulting firm specialized in Latin American oil business, particularly in the areas of E&P, Downstream, Planning, Negotiations and, Business Environment, position he has held since 2003. He is also Co-founder Partner of EPF (Energy Petroleum Forums) and Associate Director for LAGO ENERGY USA, in the areas of Consulting, and Energy Projects of the Company. He worked for Pdvsa and its affiliates for 20 years. In 1983 he joined the oil industry as Head of the International Energy Policies at Maraven, one of the former affiliates of Petróleos de Venezuela. And since 1992 he worked at the Strategic Planning Department of PDVSA as a Senior Advisor in International Energy and Politics until 2003.

From 1989 to 1992 he was part-time advisor in International Negotiations to the President of the Republic of Venezuela.

He is Full Professor at Doctoral level at the School of Law and Political Science at Central University (Venezuela 1985-onwards) and was also Professor at the Center for Development Studies (CENDES) of the same University. In his vast academic experience among the posts he had held was that of Director for the Master in Latin American Integration, at the Institute of Graduate Studies in Business Administration (IESA), in Caracas, Venezuela (1981-1983); and Associate Visiting Professor at the University of Illinois, in Urbana Campaign, USA (1984).

Alberto is an attorney by training, graduated at the National University of La Plata, Argentina, in 1971. He earned his master in Political Science at the same University in 1972 and his PhD in Political Science and International Relations at the University of North Carolina, Chapel Hill, USA, in 1977.

### **Daniels, David**

David Daniels has been the Chief Energy Modeler of the EIA since 2012, where he works to ensure internal consistency across EIA's disparate modeling and analytic products. Prior to 2012, Dr. Daniels served as Chief Scientist of Digital Sandbox, a security analytics software company, where he developed the terrorism risk analysis methodology used by the Department of Homeland Security to allocate over \$20B in grants to states and urban areas. He has also worked as a consultant for Booz Allen Hamilton, where he primarily provided technical support to a number of DARPA programs, and for The Boston Consulting Group, a commercial strategy consulting firm. His academic background is in experimental high energy particle physics, having earned his M.Sc. from Oxford and his Ph.D. from Harvard.

### **Eule, Steve**

Stephen D. Eule is the vice president for climate and technology at the U.S. Chamber of Commerce's Institute for 21st Century Energy. Mr. Eule is an experienced voice on the nexus between energy, climate change, and technology, and he has traveled around the world to speak with business, governments, think tanks, and the media in a variety of fora.

In his role with the Energy Institute, Mr. Eule oversees the collection and analysis of data on energy and climate and on the impact of technology in the energy industry. He represents the U.S. Chamber in the UN Framework Convention on Climate Change and helped found the Major Economies Business Forum on Energy Security and Climate Change, a coalition of national cross-sector business organizations from major developed, emerging, and developing economies for which the Energy Institute acts as secretariat.

Mr. Eule also is responsible for the Energy Institute's two annual and authoritative energy security reports—the U.S. Energy Security Risk Index and the International Energy Security Risk Index. These risks indices represent the first and most comprehensive efforts to quantify energy security risks over time and across a range of measures covering global fuel supplies, imports, expenditures, price and market volatility, energy use, the electric power and transportation sectors, and the environment. They have been cited by the International Energy Agency and are used by universities and think tanks across the world.

Previously, Mr. Eule was the director of the Office of Climate Change Policy & Technology at the U.S. Department of Energy. While at DOE, he oversaw the development of the U.S. Climate Change Technology Program Strategic Plan in 2006, ran President Bush's Climate VISION program, and testified many times before Congress on DOE climate and energy programs. Internationally, Mr. Eule represented DOE as part of the U.S. government delegations to the Intergovernmental Panel on Climate Change (for its Fourth Assessment Report), the UNFCCC, the Asia-Pacific Partnership on Clean Development and Climate, the G20, and other multi-lateral fora. He was lead chapter author on the U.S. Climate Action Report—2006 and contributed to other government publications.

His prior experience includes a decade working in various public policy positions. He was a subcommittee staff director on the House Science Committee covering energy, climate change, agricultural biotechnology, basic research, earthquake, and fire issues, and also served as legislative director for Rep. Nick Smith. In addition, Eule was an environmental analyst in the Washington, D.C. office of New Jersey Gov. Christine Todd Whitman. Earlier, he worked for eight years as an Orkand Corporation consultant to the Energy Information Administration and did a brief stint at the Heritage Foundation, where he was assistant editor of, and contributor to, the book Free Market Energy.

Eule earned a master of arts degree in geography from The George Washington University and a bachelor of science degree in biology from Southern Connecticut State College.

### **Klein, Daniel E.**

Daniel E. Klein is President of Twenty-First Strategies, with 40 years of experience in energy, environmental, and economic analysis. After many years as a Senior Vice President and Director of ICF Resources Incorporated, he founded Twenty-First Strategies in 1995 to offer energy and environmental consulting services to energy companies, government agencies, and others. His work in recent years has focused primarily on climate change, energy security, strategic planning for electric power, sustainability, energy supply and usage, and related policies and strategies. Specific topics have included development of energy security metrics, clean energy strategies and co-benefits, technologies for GHG reduction, transportation and sustainability, carbon capture and storage, national and international GHG reduction programs, and methods for GHG inventories and reporting. He has authored dozens of conference presentations and testified numerous times as an expert witness. Mr. Klein earned a Bachelor's degree from the Massachusetts Institute of Technology and an MBA from the Stanford Graduate School of Business.

### **Lee, Eric**

Eric G. Lee is an energy analyst on Citi's Commodities Research team in New York, and has contributed to major publications including the Energy 2020 series of reports on the shale revolution, prospects for North American energy independence, and the global economic and political impacts. He covers fundamental, macroeconomic and geopolitical research of global commodity markets, with a focus on oil price forecasting, and is regularly cited in major media publications including the Wall Street Journal, the Financial Times, the New York Times, CNBC, Bloomberg and Foreign Affairs. Prior to joining Citi, Eric received his Master's degree in International Relations and International Economics from the Johns Hopkins University School of Advanced International Studies (SAIS) in Washington, DC, where he focused on energy markets and policy.

### **Sankey, Paul B.**

Paul is a Managing Director and Senior Analyst at Wolfe Research focusing on Global Oil & Gas Markets including coverage initially of Major Oils and U.S. Refining. He plans over time, along with his experienced team, David Clark, Silvio Micheloto and Vincent Lovaglio, to expand into Oil & Gas Exploration & Production and Oil Services & Equipment and other related sectors.

Mr. Sankey joined Wolfe Research after thirteen years at Deutsche Bank, where his team was consistently top ranked. Among numerous accolades, Sankey has been voted for eight consecutive years onto *Institutional Investor's* All-America Research Team, with the #1 ranking in each of the past three years. He has been ranked #1 in *Greenwich Associates & Bloomberg* top analyst survey four times, including consecutively in the past three years.

From 1990-2000, prior to working for Deutsche Bank, Mr. Sankey was a Managing Consultant for premier Global Oil & Gas consultancy Wood Mackenzie, based in Edinburgh, Scotland. He started his career in 1990 as an analyst at the highly influential International Energy Agency, in Paris, developing a specialization in emerging markets oil and gas.

### **Schaal, Michael**

Michael Schaal is the Director of the Energy Information Administration's Office of Petroleum, Natural Gas and Biofuels Analysis. Mr. Schaal's portfolio includes all aspects of analysis and forecasting for those subject areas in support of a number of EIA's products. His primary focus is on producing the oil and natural gas and biofuels projections for EIA's Annual Energy Outlook. Mr. Schaal's prior experience includes working as a professional engineer with Bechtel Corporation of San Francisco where he was involved in economic analysis, engineering, construction, and operations of first-of-a-kind facilities, and as a consultant with Energy Ventures Analysis, Inc. advising clients on natural gas and power sector issues. Mr. Schaal received his B.S. in electrical engineering from the California State University in 1986, and his Masters degree in Mineral Economics from The Pennsylvania State University in 1995.

### **Sieminski, Adam**

Adam Sieminski was sworn in on June 4, 2012 as the eighth administrator of the U.S. Energy Information Administration (EIA). From March 2012 to May 2012, while awaiting confirmation as EIA administrator, Mr. Sieminski served as senior director for energy and environment on the staff of the National Security Council. From 2005 until March 2012, he was the chief energy economist for Deutsche Bank, working with the Bank's global research and trading units. Drawing on extensive industry, government, and academic sources, Mr. Sieminski forecasted energy market trends and wrote on a variety of topics involving energy economics, climate change, geopolitics, and commodity prices.

From 1998 to 2005, he served as the director and energy strategist for Deutsche Bank's global oil and gas equity team. Prior to that, from 1988 to 1997, Mr. Sieminski was the senior energy analyst for NatWest Securities in the United States, covering the major U.S. international integrated oil companies.

He also had acted as a senior adviser to the Energy and National Security Program at the Center for Strategic and International Studies, a nonpartisan policy think tank in Washington, DC. He is a senior fellow and former president of the U.S. Association for Energy Economics, and served as president of the National Association of Petroleum Investment Analysts.

In 2006, Secretary of Energy Samuel Bodman appointed Mr. Sieminski to the National Petroleum Council (NPC), an advisory group to the secretary of energy, where he helped author the NPC's Global Oil and Gas Study: The Hard Truths.

In addition to his affiliation with the Center for Strategic and International Studies, he was also an advisory board member of the Global Energy and Environment Initiative at Johns Hopkins University/SAIS. He had also served as chairman of the Supply-Demand Committee of the Independent Petroleum Association of America, and as an advisory member of the Strategic Energy Task Force of the Council on Foreign Relations. He is a member of the Washington, DC, investment professional society, and holds the Chartered Financial Analyst (CFA) designation. He received both an undergraduate degree in civil engineering and a master's degree in public administration from Cornell University.

### **Sweetnam, Glen**

In June 2012, Glen Sweetnam was named Director, African and Middle Eastern Affairs, Office of Policy and International Affairs in the U.S. Department of Energy. In this position, Mr. Sweetnam is responsible for managing DOE's bilateral and multilateral engagement with African and Middle Eastern countries. His office is also responsible for advising DOE leadership on world oil market developments, related policy responses, and U.S. government engagement on those issues in the International Energy Agency, the International Energy Forum, and other ministerial fora.

Mr. Sweetnam has 25 years of leadership experience in the energy industry in both the private and public sectors. Prior to his current position, Mr. Sweetnam was the Senior Director for Energy and Climate Change on President Obama's National Security Staff from March 2010 until January 2012.

From October 2005 until March 2010, he was the Director of the International, Economic, and Greenhouse Gases Division of the Energy Information Administration (EIA). This Division produces the *International Energy Outlook* and two congressionally mandated reports on U.S. greenhouse gas emissions.

Prior to joining the EIA, Mr. Sweetnam worked at senior levels for both energy merchants and exploration and production companies, including Reliant Energy, ARCO, and Fina Oil and Chemical Company.

In the early 1980s, he was the Director, Economic Analysis, Office of Policy and International Affairs, U.S. Department of Energy, where he played a significant role in the deregulation of the domestic natural gas industry.

Mr. Sweetnam received a B.S. in Electrical Engineering from Stanford University and a Masters of Public Policy from University of California, Berkeley.

### **Webster, Jamie**

Jamie Webster is a Senior Director in IHS Energy. He leads IHS' global oil markets team with a geographically dispersed group of professionals. Jamie came to IHS through the acquisition of PFC Energy in 2013, where he ran that firm's global oil markets services. His work integrates oil market fundamentals with geopolitics and economics to provide a complete view of the current and future oil market. Located in Washington DC, he regularly interacts with OPEC members as well as US policymakers - an increasingly important channel as the US oil production growth is changing the landscape of oil supply. He was one of the co-authors of the recent IHS study: "US Crude Oil Export Decision: Assessing the impact of the export ban and free trade on the US Economy". He has also led

several large consulting projects that look at the changes in the oil market and how companies may react. Jamie has spoken on global energy issues for the Aspen Institute, CNBC's Power Lunch, CNN's The Situation Room, World News Tonight and Al-Jazeera and has been quoted in The New York Times, Financial Times, Bloomberg and others.

Previously Jamie was with Argus Media where he led a business unit focused on the inter-fuel dynamics of US power generation markets and how they would be impacted by economics and policy choices. Prior to this he was a project developer with Beacon Energy where he developed energy infrastructure projects in North America and Europe

## **Westerdale, Rick**

With over twenty years of experience in the Energy Industry, Richard (Rick) W. Westerdale II is currently Director of the Energy Resources Bureau's Policy Analysis and Public Diplomacy Office in the U.S. State Department. Rick leads and directs efforts to identify, analyze, and evaluate the strategic importance of policies in international energy affairs including governance, access to energy, use of renewables and low carbon technologies, and increasing access to conventional energy resources. He represents the Department in a variety of senior-level engagements and carries out official visits to advance international engagement, forge cooperation with partner-nations and establish agreements on a range of energy security policy initiatives. Rick maintains liaison with key stakeholders in the U.S. and foreign media and private sectors, other USG and foreign agencies, public groups, NGOs, and organizations with equities in the international arena.

Prior to his current assignment in Washington, Rick was responsible for providing expert commercial & technical advice, guidance, and leadership in the oil and gas sector with a specialization in Energy at the United States Embassy in Baghdad, Iraq. Previously, with both Westerdale Holdings and GM Ryan International, Rick was responsible for new business development and identifying a suite of strategic growth opportunities; then implementing an aggressive strategy for pursuit and capture. This extended beyond traditional business development that is focused on project / program development and included the development of human capital.

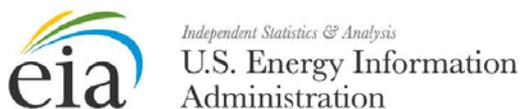
During his tenure with ExxonMobil, Rick last worked within a small staff group that reported directly to the Chairman & CEO. Prior to that, he lived overseas, in the Middle East and Australia, and held multiple senior level positions. He gained extensive commercial and marketing experience by working with host governments and stewarding multi-cultural engagements. While in Abu Dhabi, his duties included initiation of commercial strategies, coordination of internal resources, and development of proposals that included competitive tender submissions as well as direct negotiations. While in Australia, Rick was responsible for overseeing marketing efforts into the Asia Pacific and developed the company's first equity marketing strategy for LNG. Rick also managed and stewarded non-operator interests within multiple Joint Ventures.

Additionally, Rick has held a variety of positions in ExxonMobil's downstream business which included Business Unit Manager, Support & Controls Manager, Operations Manager and Engineering Supervisor. These assignments provided both managerial and leadership experience including P/L responsibility,

staff development and managerial oversight. Rick's early assignments were primarily engineering related with construction, maintenance and environmental emphasis. Subsequent sales assignments broadened his knowledge of the industry and marketing, including retail sales.

A native of Winchester, Kentucky, Westerdale received a Bachelor of Science degree in Civil Engineering from the University of Kentucky in 1991. He was awarded the honorary title of "Kentucky Colonel" for service to his state and community that same year. Rick earned a Master of Business Administration degree from Averett College in 1994. He is also a registered Professional Engineer. Rick is married and lives in Northern Virginia where he and his family are active in the local community.

## Attachment C: List of Participants



**List of confirmed participants:**

*Geopolitics, Country Risk Assessment, and Commodity Pricing Workshop*  
Tuesday 15 July 2014. 2:00 to 5:00 pm

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Tristan Abbey Senate Energy Committee	Alberto Cisneros Global Business Consultants (GBC)	Sarah Emerson Energy Security Analysis
Matt Armstrong Baker and Hughes	David Clark Wolfe Research	Stephen Eule U.S. Chamber of Commerce
Asmeret Asghedom EIA	Michael Cohen Barclays	Mindi Farber-DeAnda EIA
Justine Barden EIA	Mike Cole EIA	Aloulou Fawzi EIA
Joseph Benneche EIA	John Conti EIA	Michel Ford EIA
Abha Bhargava Canada NEB	Troy Cook EIA	Xiao Fu Bank of China
Tara Billingsley Senate Energy Committee	David Daniels EIA	Syarifa Galeb Financial Services
Julian Binfield University of Missouri–Columbia	Carmine DiFiglio U.S. Department of Energy	Adrian Geagla EIA
Kevin Book ClearView Energy Partners	Gary Dirks Arizona State University	David Goldwyn Goldwyn Global Strategies
Jason Bordoff Global Energy Policy Center	Linda Doman EIA	Howard Gruenspecht EIA
Bob Brackett Sanford C. Bernstein & Co., LLC	Jim Dorian U.S.G.	Gurcan Gulen Bureau of Economic Geology's Center for Energy Economics
William Brown EIA	Candace Dunn EIA	Sidhant Gupta Microsoft Research
Tom Choi Deloitte	Brian Efird KAPSARC	

Susan Grissom EIA	Elizabeth May EIA	Adam Sieminski EIA
Antoine Halff International Energy Agency	Raja Marzouki IMF	Laura Singer EIA
Matthew Hansen Canada NEB	Kevin Massy Statoil	Alison Smith EIA/Leidos
Randa Hudome Fahmy Hudome International	Tom McDermott Georgia Institute of Technology	Kay Smith EIA
Hiro Iwanaga Partner Fund Management	Peter McNally Kingdom Capital Management	John Staub EIA
Anne Keller Woodmac	Alex Metelista EIA	Mark Stern MT Energy Associates
Nasir Khilji U.S. Department of Treasury	Ryan Mooney Pointstate	Glen Sweetnam U.S. Department of Energy
Bo Kim U.S. Chamber of Commerce	Sam Napolitano EIA	Dana Van-Wagener EIA
Daniel Klein Twenty-First Strategies	Jill Nesbitt Scotcher Chevron	Jamie Webster IHS Energy
Robert Kleinberg Schlumberger	John Powell EIA	Rick Westerdale U.S. Department of State
Erik Kreil EIA	James Preciado EIA	Jarrett Whistance University of Missouri – Columbia
Sarah Ladislaw CSIS	Nancy Prue Petroleum and Resources	Steve Wittrig Advanced Technology at Clean Air Task Force
Angelina LaRose EIA	Jay Ratafia-Brown EIA/Leidos	Xiaojie Xu Chinese Academy of Social Sciences
Eric Lee Citi Group	Honor Sankey Wolfe Research	Terry Yen EIA
Tim Lieuwen Georgia Institute of Technology	Paul Sankey Wolfe Research	Michael Yo EIA
Arup Mallik EIA	Michael Schaal EIA	
David Manowitz EIA	Rodney Schmidt Northrise Energy	