

The world's premier energy conference

# IHS ENERGY CERAWEEK®



34th Executive Conference and Related Events

## Turning Point: Energy's New World



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# Conference Review 2015



**Rex Tillerson** (left), Chairman & CEO, ExxonMobil and **Gaurdie Banister**, President & CEO, Aera Energy



**Lisa Murkowski**, Chairman, US Senate Energy and Natural Resources Committee



**Robert Dudley**, Group Chief Executive, BP



**Patrick Pouyanné**, CEO & President of the Executive Committee, TOTAL SA



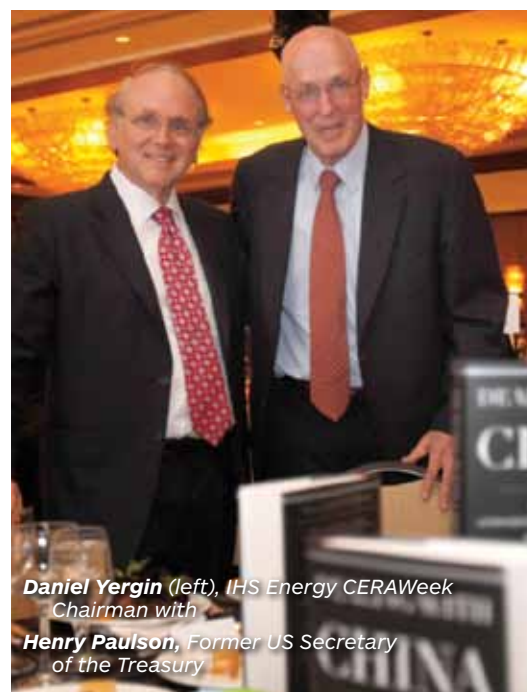
**Eidar Sætre**, President & CEO, Statoil



**Vagit Alekperov**, President, OAO LUKOIL



(L to R) **Stephen Chazen**, President & CEO, Occidental Petroleum; **Ryan Lance**, Chairman & CEO, ConocoPhillips; and **Shaikh Nawaf Al-Sabah**, Chief Executive Officer, Kuwait Foreign Petroleum Exploration Company



**Daniel Yergin** (left), IHS Energy CERAWeek Chairman with **Henry Paulson**, Former US Secretary of the Treasury

*“Leading industry names...gathered at what has been described as the Super Bowl of energy events, or one of the most important energy events in the world.”*

– National Journal



**Sally Jewell**, US Secretary of the Interior



**Ernest Moniz**, US Secretary of Energy



**Richard Kinder**, Chairman & CEO, Kinder Morgan



**Joe Kaeser**, President & CEO, Siemens AG



**Pedro Joaquín Coldwell**, Secretary of Energy, Ministry of Energy, Mexico; and  
**Greg Rickford**, Minister, Natural Resources, Canada



**Emilio Lozoya Austin**, Chief Executive Officer, Petroleos Mexicanos



**Claudio Descalzi**, Chief Executive Officer, Eni



**Miguel Matías Galuccio**, Chief Executive Officer, YPF



**Greg Boyce**, Chairman & Chief Executive Officer, Peabody Energy; and  
**Gina McCarthy**, Administrator, US Environmental Protection Agency



**Charif Souki**, Chairman & CEO  
Cheniere Energy



**Jean-Pascal Tricoire**, Chairman & CEO, Schneider Electric



**Leo Denault**, Chairman of the Board & CEO, Entergy Corporation



**Thad Hill**, President & CEO, Calpine Corporation



**Pat Vincent-Collawn**, Chairman, President & CEO, PNM Resources



**Enrique Ochoa Reza**, Director-General of the Mexican Federal Electricity Commission (CFE)



**Walter Isaacson**, President & CEO, The Aspen Institute



**Ian Macfarlane**, Minister for Industry and Science, Australia

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# Mission Statement

“Turning Point: Energy’s New World” was the theme of the 34<sup>th</sup> IHS CERAWEEK. The Executive Conference convened at a moment of profound turbulence and change for the global energy communities. CERAWEEK addressed the shifts occurring throughout the oil, gas and power industries – and what the new reality means for markets, industry structure, investment, costs, environment, operations and strategy. CERAWEEK speakers shared their perspectives on leading through the cycle. The conference culminated with a look at “Energy’s Grand Challenges” – sustaining technology innovation, cyber-security, emerging infrastructure risks, and geopolitical hot spots.


CERAWEEK annually convenes leaders from the global energy community to offer a comprehensive and integrated global framework for understanding what’s ahead. Our goal at CERAWEEK is to offer integrated, global dialogue and insight into the energy future. We aim to provide new ideas and a comprehensive understanding of the rapidly changing landscape – and the implications for strategy, investment and leadership.

The event includes public and private sessions, with contributions from senior executives and officials, thought leaders, NGOs, and IHS experts from across the energy spectrum and from the policy world and the financial, tech, and industrial communities. The event fosters dialogue among participants consisting of over 2,800 delegates from over 60 countries.



  
**Daniel Yergin**  
IHS Energy CERAWEEK  
Chairman



  
**James Rosenfield**  
IHS Energy CERAWEEK  
Co-Chairman

Vice Chairs: **James Burkhard**, Oil  
**Michael Stoppard**, Natural Gas  
**Lawrence Makovich**, Power

# Managing Through Turbulence

IHS Energy CERAWeek, the premier global energy conference, opened on April 20, 2015 with a focus on “Managing through Turbulence.” Topics encompassed the Iran nuclear deal; the economics of the oil price drop; innovation in a down cycle; and US energy export policies. Speakers addressed changing geopolitics, leadership, strategies and technology challenges, along with the impacts of economic sanctions on the Russian energy industry.

## Future US Energy Policy

**Senator Lisa Murkowski** and **Ryan Lance** delivered the opening conference keynote dialogue, chaired by IHS Vice Chairman **Daniel Yergin**. Both emphasized the need for lifting the ban on crude oil exports. Senator Murkowski pointedly asked why lift sanctions on Iranian oil but retain “sanctions” in the form of the ban on US oil?



**Senator Lisa Murkowski** (R-Alaska),  
Chairman of the US Senate Energy & Natural  
Resources Committee



**Ryan Lance**, Chairman & CEO,  
ConocoPhillips

**“... yet another outstanding CERAWeek ... it truly is an opportunity for great collaboration, great networking, great thought.”**

– Senator Lisa Murkowski

## Sustaining Innovation Through the Cycle

How to maintain innovation in the current environment of reduced revenues and shrinking budgets driven by the downturn in energy prices? **Steve Bolze**



**Daniel Yergin** with **Steve Bolze**, President & CEO,  
GE Power & Water



**Muhammad Al-Saggaf**, Acting Head of Shared Operations &  
Services, Saudi Aramco, and **Shaikh Nawaf Al-Sabah**, CEO,  
Kuwait Foreign Petroleum Exploration Company (KUFPEC)



**Carlos Pascual**, Senior Vice President, IHS



**William Burns**, President, Carnegie Endowment for International Peace; Former US Deputy Secretary of State

discussed how innovation must be bolder, faster, and smarter during the downturn. **Muhammad Al-Saggaf** emphasized the central importance of innovation for companies to remain industry leaders. **Shaikh Nawaf Al-Sabah** summarized his view on whether to sustain research on innovation by quoting former UK Prime Minister Margaret Thatcher during the Gulf War crisis: “Now is no time to go wobbly.”

## An Iran Nuclear Deal: Prospects for Middle East and the World

**William Burns**, who as US Deputy Secretary of State played a key role in the negotiations with Iran, and **Carlos Pascual** outlined the Iranian nuclear deal and discussed both its elements and the regional and global impact.

## Turning Point for Oil and the Economy

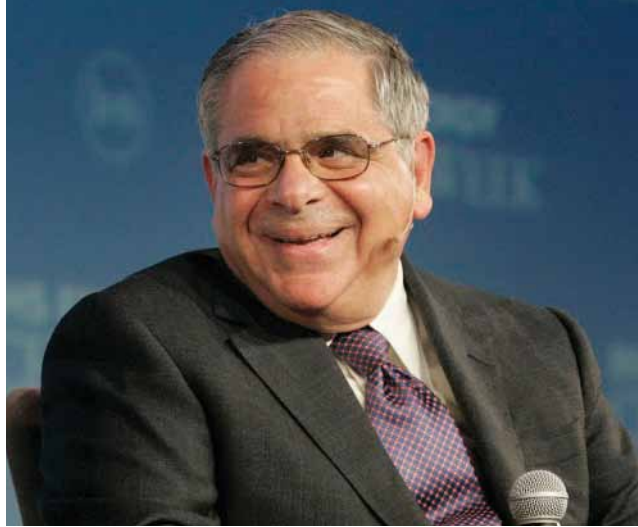


**Zbyszko Tabernacki**, IHS Vice President, Economics & Country Risk; **Jim Burkhard**, Vice President Research, IHS & Vice Chair, CERAWEK; and **Nariman Behravesh**, IHS Chief Economist

# Managing Through Turbulence

## The Future of North American Energy

**Stephen Chazen** said that the Permian Basin, with enormous potential for oil production, will continue to be a key focus for the company. Mr. Chazen noted that the dynamics of the current oil cycle are different from past cycles, when the oil industry was shut out of capital markets. In the current cycle, bond and stock markets remain open, which, because of greater capital availability and fewer strictures, could make the down cycle last.



**Stephen Chazen**, President & CEO, Occidental Petroleum



**Vagit Alekperov**, President, OAO LUKOIL

## Global Energy Dialogue

**Vagit Alekperov** pointed to the current low oil price as an opportunity for industry wide evolution operationally as well as a driving force behind decreased resource nationalism. He also discussed the effect of current international sanctions on the Russian oil industry, Lukoil's strategy, and Russia's large shale oil potential.

## US Policy Dialogue

**Sally Jewell** identified goals for the remainder of President Barack Obama's term, and the department's activities on Arctic development, hydraulic fracturing on public lands, and sustainability. Secretary Jewell emphasized the need to balance resource accessibility and sustainability, and noted the unique challenges of working in the federal government.



**Sally Jewell**, US Secretary of the interior

## Opening Keynote

**Rex Tillerson** opened CERAWEEK's Oil Day with remarks about the US energy transformation and the need for US government policies to facilitate continued oil and natural gas investment in order to ensure US energy security. He called for greater regulatory clarity and improved decision-making, approval of the Keystone XL pipeline, and promotion of free trade of US oil and natural gas. In discussion, Mr. Tillerson said that the lower oil price environment "will be with us a for a while," but added that the US oil and natural gas industry is nonetheless "resilient" and "responds best under pressure."



**Rex Tillerson**, Chairman & CEO, ExxonMobil

*"I appreciate the influence and the impact that CERAWEEK has in our industry."* — Rex Tillerson



## Oil Keynote

After a moving tribute to the late **Christophe de Margerie**, Dr. Yergin welcomed **Patrick Pouyanné** for the oil keynote. His discussion centered on the impact of the oil price drop on TOTAL and the industry and the effect of geopolitics on TOTAL's activities in various countries. Mr. Pouyanné sees the low price environment as an opportunity for the industry to be more efficient and reduce costs. TOTAL's activities globally will continue despite a difficult geopolitical environment. He commented that solutions for climate change will include greater use of natural gas and solar energy.

**Patrick Pouyanné**, TOTAL SA CEO & President of the Executive Committee

## Keynote

**Robert Dudley** opened with a description of the operational and cultural changes that BP has undergone since the Deepwater Horizon tragedy. That was followed by a wide-ranging discussion on the implications of low oil prices, Russian sanctions, and the future role of oil in the world's energy mix. Mr. Dudley pointed to the resiliency of US production, despite falling activity levels, and the pressures this would place on future oil prices.



**Robert Dudley**, Group Chief Executive, BP

*"As we all know, this conference is always one of the highlights of the year for our industry. It's a great gathering of the industry."*

— Robert Dudley



**Miguel Matías Galuccio**, CEO, YPF

## Global Oil Plenary

**Miguel Matías Galuccio** and **Emilio Lozoya Austin** discussed their companies' strategies, challenges, and opportunities. Mr. Lozoya said that limited cash flow from declining production was PEMEX's current challenge, but emphasized the determination to keep energy reforms on track. A major objective is for PEMEX to become an "agile" company that will maximize the economic value of its assets through strategic partnerships and its new corporate structure. Mr. Galuccio discussed the transformation at YPF during his three-year tenure, including its progress in revitalizing mature production, and opening up offshore exploration. A major focus is to develop Argentina's large shale oil resource.



**Emilio Lozoya Austin**, CEO, Petróleos Mexicanos (PEMEX)

## Keynote: Leadership Insights

**Eldar Sætre** set out a double objective for the oil industry – lower costs and lower carbon. These, he said, were interlinked and fundamental to the sustainability of the industry. On the cost side, he stressed the necessity of pushing toward standardization, noting early success Statoil has had offshore Norway. On carbon emissions, Mr. Sætre said the industry must work hard to be viewed as part of the solution, rather than part of the problem. He also provided an update on the company's operations offshore Norway and onshore US.

## Ministerial Dialogue

**Tomás González Estrada** highlighted the energy industry's creation of jobs and importance for funding public infrastructure over the past two decades – now challenged by low prices. He emphasized that Colombia will continue to deploy economic and regulatory tools to attract sufficient investment.



**Tomás González Estrada**, Colombia's Minister of Mines & Energy



**Eldar Sætre**, President & CEO, Statoil



**Roger Diwan**, Vice President, Global Energy & Finance, IHS



**Raoul LeBlanc**, Vice President, North America Upstream & Finance, IHS



**Bhushan Bahree**, Research Director & Advisor, Global Oil Markets, IHS

## Plenary: Is North America The New Swing Producer in World Oil?

IHS experts **Roger Diwan**, **Raoul LeBlanc**, **Bhushan Bahree**, and **Atul Arya** offered insight into the future of the tight oil revolution, which has made the United States the number one source of growth in world crude oil supply since 2008—by far. The US is becoming the new “swing supplier” owing to the responsiveness of its oil production to changes in the market. The new “US Swing Era” will impact investment, production, OPEC decision-making, and the future of world oil.



**Scott Sheffield**, Chairman & CEO, Pioneer Natural Resources and **Harold Hamm**, Chairman & CEO, Continental Resources



**Daniel Yergin (left)** with **John Hess**, CEO, Hess Corporation

## Upstream Plenary

The Upstream Plenary brought together the leaders of three of the companies at the forefront of the shale revolution in the United States – **Harold Hamm**, **John Hess**, and **Scott Sheffield**, along with **Peter Jackson**. Chaired by **Daniel Yergin**, the panelists agreed that the time has come to lift US crude oil export ban to help sustain production

amidst lower prices. They discussed strategies for managing cost reductions in the current low price environment while maintaining capabilities, how high shale production could go and how long the growth will last, and the transfer of unconventional technology to the exploitation of conventional plays.

## Oil Market and Downstream Plenary

**Gary Heminger**, **Greg Armstrong**, **Jack Gerard**, and **Adam Sieminski**, Administrator for the US Energy Information Administration discussed the resurgence of the US petroleum industry and its impact on refining and transportation, the changing character of the oil market, and the challenges going forward.



**Gary Heminger**, President & CEO, Marathon Petroleum



**Greg Armstrong**, Chairman & CEO, Plains All American



**Adam Sieminski**, Administrator for the US Energy Information Administration



**Jack Gerard**, President & CEO, American Petroleum Institute



**James Burkhard**, (Chair), Vice President Research, IHS & Vice Chair, CERAWeek

## Keynote

**Henry Paulson**, former US Secretary of Treasury and author of the new book *Dealing with China: An Insider Unmasks the New Economic Superpower*, engaged in a wide-ranging discussion with Daniel Yergin on the challenges facing China as its global role continues to expand, and on the complex balance of US and China relations. He highlighted President Xi Jinping's reform program, the crackdown on corruption, property rights, the need to strengthen rule of law, and promotion of greater competition and efficiency in China's economy. Asked by Dr. Yergin about the lessons from the financial crisis of 2008, Secretary Paulson noted the central importance of "acting decisively and quickly and then correcting mistakes as you go along."

*"I've heard about this conference ... but being here is amazing: just the people and the energy in the room..."*

— Henry Paulson



**Henry Paulson**, former US Secretary of Treasury



**Daniel Poneman**, President & CEO, Centrus Energy Corp. & former US Deputy Secretary of Energy; and **Jonathan Gear**, Executive Vice President, IHS



**Deborah Caplan**, EVP, NextEra Energy; **Gene Minnich**, SVP, IHS; **Larry Makovich**, Chief Power Strategist, IHS & Vice Chair, CERAWEK; and **Daniel Yergin**



**Eldar Sætre**, President & CEO, Statoil; **Ryan Lance**, Chairman & CEO, ConocoPhillips; and **John Hess**, CEO, Hess Corporation

# Natural Gas

In the Gas Day keynote dialogue, **Claudio Descalzi** addressed the current impact of low oil prices on gas markets and gas' robust role longer term, helped by the push toward cleaner fossil fuels globally. He emphasized the need for supply diversification for energy security and spoke of Eni's pipeline of opportunities around the world. Africa may become a much bigger player in global gas and a major supplier to Europe.

## Global Gas Plenary

**Andrew Brown**, **Charif Souki**, **Hirobumi Kawano**, and **Volodymyr Demchyshyn** agreed that the global outlook for gas consumption is strong and that natural gas is an important part of the answer to the challenge of climate change. The discussion focused on future trends of global gas, in particular the future of LNG, oil-linked gas contracts, and a need for a new gas pricing model.



**Claudio Descalzi**, CEO, Eni



**Andy Brown**, Upstream International Director, Royal Dutch Shell plc; **Hirobumi Kawano**, President, Japan Oil, Gas & Metals National Corporation; **Volodymyr Demchyshyn**, Minister of Energy and Coal Industry, Ukraine; and **Charif Souki**, Chairman & CEO, Cheniere Energy

*“...long-term pipeline contracts are increasingly driven by a “demand pull” rather than a “supply push.”*

— Richard Kinder

A key topic was the speed and scale of the upcoming US LNG exports and their competitive impact on the global market. Minister Demchyshyn discussed Ukraine’s gas storage and transit system and its new integration with the European gas supply system.

## Keynote

**Richard Kinder** recounted the early days of the company and its expansion from only 2,000 miles of pipeline to about 84,000 miles today – accounting for a third of total US infrastructure. Mr. Kinder stressed that pipeline development was still catching up to the growth of new oil and natural gas supply. He expressed disappointment about the



**Richard Kinder, Chairman & CEO, Kinder Morgan**

slow regulatory response to permitting for the required infrastructure. He also discussed Canada’s need for expanded pipeline infrastructure to the west coast.



# Natural Gas

## Energy Leader Insight Dialogue

**Joe Kaeser** offered strategic perspectives on Siemens global business, including cost cutting in the oil and natural gas industries, the integration of Siemens most recent acquisitions in the oil and gas sector, and the challenges of conducting business within Europe and with Russia. He also discussed technology opportunities including the application of automation and electrification to the oil and gas industry.

## Ministerial Dialogue

**Ian Macfarlane** highlighted the strong cooperation between Australia and the United States and the nations' shared commitment to global security of supply. Minister Macfarlane said that Australia's natural gas market has been transformed. Capitalizing on the benefits reaped from the recent extensive gas market investment, Minister MacFarlane said that Australia is focusing on establishing the environment to sustain the next wave of development.



**Joe Kaeser**, President & CEO, Siemens AG

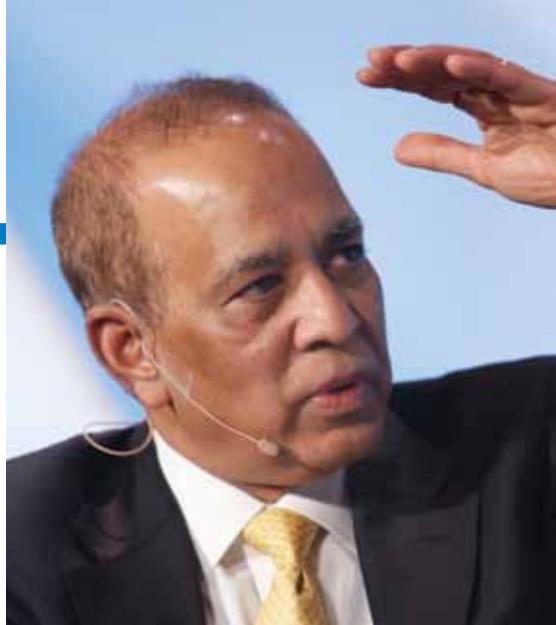


**Ian Macfarlane**, Australian Minister for Industry & Science

***"[Australia] will become one of the world's largest exporters by 2018-19."***

***– Ian Macfarlane***





**Atul Arya**, Senior Vice President, Energy, IHS



**Sarwjit Sambhi**, Managing Director, Centrica Energy



**Shigeru Muraki**, Executive Advisor, Tokyo Gas

## International Gas: Building High Value Demand

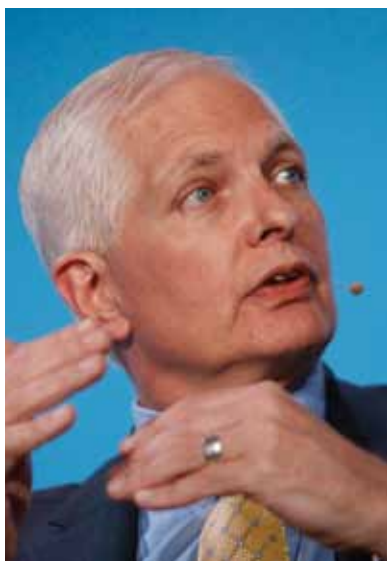
**Shigeru Muraki**, **Sarwjit Sambhi**, and **Andy Barrett** offered insight on the future of gas from a variety of perspectives -- the future of Japan's energy market, the European energy picture, global gas supply and demand dynamics, and the need to leverage gas' advantages and energy supply diversification to strengthen global gas demand.

## North American Natural Gas: Rediscovering Gas

**Steve Mueller**, **Al Monaco**, **Michael Smith**, and **Robert Ineson** addressed the ways, new and old, in which the industry is working to capture value from natural gas. The United States enjoys competitive advantages that will facilitate a large build-out of LNG export capacity. Greater regulatory and permitting certainty is needed in order to eliminate regional price disparities and reduce volatility—an outcome that would benefit players across the value chain.



**Robert Ineson** (Chair), Managing Director, North America Natural Gas & Global LNG, IHS



**Steve Mueller**, Chairman & CEO, Southwestern Energy Company



**Al Monaco**, President & CEO, Enbridge



**Michael Smith**, Chairman & CEO, Freeport LNG

# Ministerial Dialogue



**Daniel Yergin (Chair):** **Pedro Joaquín Coldwell**, Secretary of Energy, Ministry of Energy, Mexico; **Greg Rickford**, Minister, Natural Resources, Canada; and **Ernest Moniz**, Secretary of Energy, United States

A unique Plenary brought together the three energy ministers of North America – **Ernest Moniz**, **Pedro Joaquín Coldwell**, and **Greg Rickford** in a panel chaired by **Daniel Yergin**. The ministers made clear their determination to deepen existing energy cooperation.

This included expansion and integration of infrastructure such as pipelines and electrical grids, the harmonization of regulations of the energy industry and increased technology transfer, and a common commitment to climate goals.



# Power

## North American Power CEO Dialogue

**Thad Hill**, **Leo Denault**, and **Pat Vincent-Collawn** joined IHS Chief Power Strategist **Lawrence Makovich** in the CEO dialogue. Discussion focused on reactions to the US Environmental Protection Agency's Clean Power Plan; electricity load growth on the US Gulf Coast and the rest of the country and the drivers behind it; the challenges associated with rooftop photovoltaic market penetration; and the response to current policy regulations and power market uncertainty.



**Thad Hill**, President & CEO, Calpine Corporation



**Lawrence Makovich**, Chief Power Strategist, IHS & Vice Chair, CERAWeek



**Leo Denault**, Chairman of the Board & CEO, Entergy Corporation and **Pat Vincent-Collawn**, Chairman, President, & CEO, PNM Resources



**Enrique Ochoa Reza**, Director-General of the Mexican Federal Electricity Commission (CFE)

## The Future of Mexican Power

**Enrique Ochoa Reza** described the profound transformation of Mexico's power industry. He outlined main goals: to decrease the use of high-cost fuel oil and replace it with natural gas; to promote the development of renewables to reduce negative impacts on the climate; and to decrease the technical and nontechnical losses associated with power transmission and distribution.

# Power

## Keynote

**Gina McCarthy**, described EPA's proposed Clean Power Plan (CPP) to reduce carbon emissions from the power sector. The United States is already headed toward a low carbon future and the CPP will accelerate that progress. Responding to concerns about CPP costs, she said the investments in energy efficiency and transmission needed to meet the CPP requirements are already happening and that the rule will merely accelerate them. She noted that the rule will generate billions of dollars in benefits through reductions in particulate matter, which causes asthma and other respiratory illnesses. She stated that she will not accept a rule that jeopardizes the reliability of the US electric grid.



**Gina McCarthy**, Administrator, US Environmental Protection Agency (EPA)

## The Future of Global Coal

**Greg Boyce** and **Ernie Thrasher** observed that coal is still the world's fastest growing fuel but noted that coal's center of gravity continues

to shift eastward to Asia. They agreed that a diversified fuel slate is best for the global energy mix, and discussed how to increase technological innovation in the coal industry.



**Jim Thompson**, Director, Coal, IHS Energy, (Chair); **Greg Boyce**, Chairman & CEO, Peabody Energy; and **Ernie Thrasher**, CEO, Xcoal & XLNG Energy Resources



**Robert Flexon**, President & CEO, Dynegy



**Jean-Pascal Tricoire**, Chairman & CEO, Schneider Electric



**James Hughes**, CEO, First Solar

## Evolving Power Business Models: a Global Perspective

**Robert Flexon**, **Jean-Pascal Tricoire**, and **James Hughes** focused on how power company business models are changing, including the value chain, products, customers, capabilities, and how firms capture value.

## Innovation and Technology in Electric Power

**Lisa Davis**, **Thomas Siebel**, and **John Woolard** discussed the role of individual companies and the power grid in encouraging the innovation of technology for electric power. To spur innovation, the power grid will have to be more dynamic and the regulatory constraints removed. **Jone-Lin Wang** highlighted that the power grid in the US Eastern Interconnection is the biggest machine on earth, syncing together generators, transmission lines, and millions of households.



**Lisa Davis**, Member of the Managing Board, Siemens AG



**Thomas Siebel**, Chairman & CEO, C3 Energy



**John Woolard**, Vice President, Energy, Google

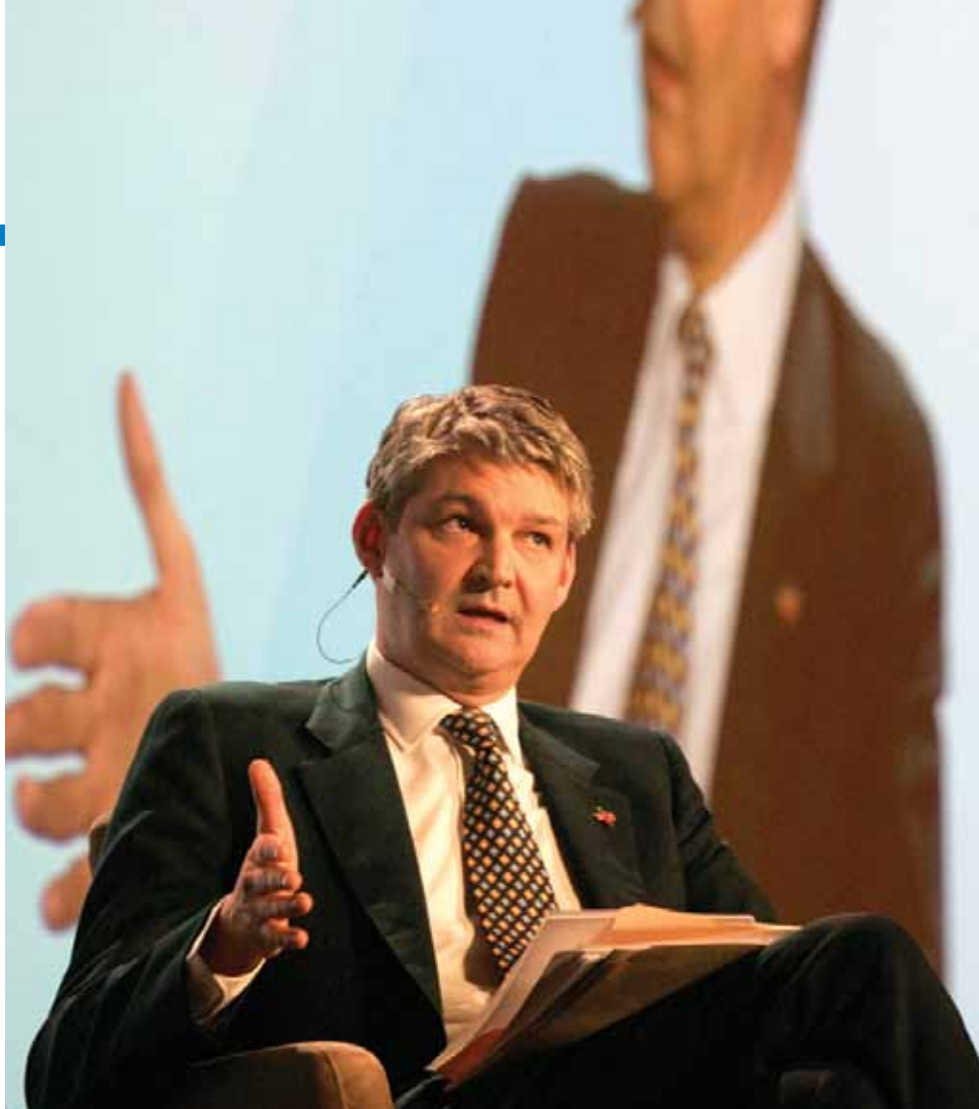


**Jone-Lin Wang**, Vice President, IHS

# Power

## Climate Change Policy Plenary: Paris in December and What's Ahead

**Rachel Kyte, Stephen Lovegrove, Todd Stern, and Carlos Pascual** (Chair) stressed the significance of the 2014 US-China climate agreement. They predicted a significant outcome from the upcoming 21st session of the Conference of the Parties in Paris in December 2015. The panelists stressed that a low-carbon future does not need to hinder economic growth. Rather, they emphasized the importance of creating proper commercial incentives. Increasing energy access in developing countries is paramount, but the challenge is for it to be done on a sustainable basis.



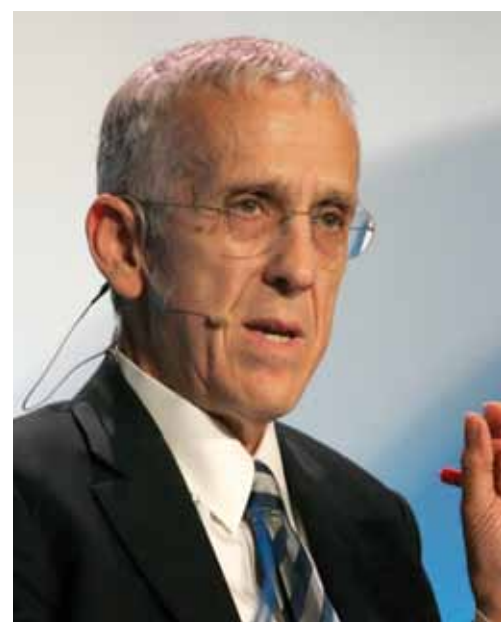
**Stephen Lovegrove**, Permanent Secretary, Department of Energy & Climate Change, United Kingdom



**Carlos Pascual**, Senior Vice President, IHS



**Rachel Kyte**, Group Vice President & Special Envoy, Climate Change, World Bank



**Todd Stern**, Special Envoy for Climate Change, US State Department

## Keynote

**General Keith Alexander (retired)** discussed his recommendations for protecting companies and the government against cyberterrorism. He identified three types of threats to companies: the theft of intellectual property, which he considers the greatest transfer of wealth; criminal activity for profit, such as recent stealing of personal data from major retailers; and attacks on government entities or on international organizations such as the World Bank. Better information sharing is needed between companies on cyber threats, including liability protection for those that share information.



*“... the theft of intellectual property, which [is] the greatest transfer of wealth...”*

— General Keith Alexander

**General Keith Alexander (retired)**, former Director of the National Security Agency and Commander, US Cyber Command



# Cybersecurity and Emerging Infrastructure Threats



**Atul Arya**, (Chair); **Daniel B. Poneman**, President & CEO, Centrus Energy Corp.; **Suzanne Spaulding**, Under Secretary, National Protection & Programs Directorate, US Department of Homeland Security; **John Grossenbacher**, Laboratory Director, Idaho National Laboratory; and **Jerald Sussman**, Founder & CEO, GridWare

**John Grossenbacher, Suzanne Spaulding, Jerald Sussman, and Daniel Poneman** agreed that cybersecurity threats are becoming more sophisticated and that electric grids

are a key target for hackers. Companies need to identify and assess these risks and implement systems to respond to such threats. Industry will need to show strong leadership in this process, and the government will need to work collaboratively with the private sector.

## Geopolitical Hotspots and Drivers of Change

Leading experts **Nicholas Eberstadt, James Clad, Angela Stent, and Raad Alkadiri**, addressed the world's hotspots including the Middle East, India, China, and Russia, both in relation to and independent of US policy.



**Nicholas Eberstadt**, Henry Wendt Chair in Political Economy, American Enterprise Institute



**Raad Alkadiri**, Managing Director, Energy Insight, IHS



**James Clad**, Senior Advisor for Asian Affairs, Center for Naval Analyses



**Angela Stent**, Professor & Director, Center for Eurasian, Russian & East European Studies, Georgetown University

# Technology

## The View from MIT

Five professors from the Massachusetts Institute of Technology (MIT): **Donald Sadoway**, **Robert Armstrong**, **Kripa Varanasi**, and **Dennis Whyte** joined chair **Daniel Yergin** to discuss game-changing technologies on the horizon and the impact these technologies will have on the future of energy. Four key pathways include electrical chemical pathways; the internet of things; online learning; surfaces, interfaces and coatings; and nuclear fusion. Others discussed included new superconductors, 3D printing, and molten salt blankets.



**Donald Sadoway**, John F. Elliot Professor of Materials, MIT



**Robert Armstrong**, Director of the MIT Energy Initiative



**Sanjay Sarma**, Professor of Mechanical Engineering & Dean of Digital Learning



**Kripa Varanasi**, Professor of Mechanical Engineering



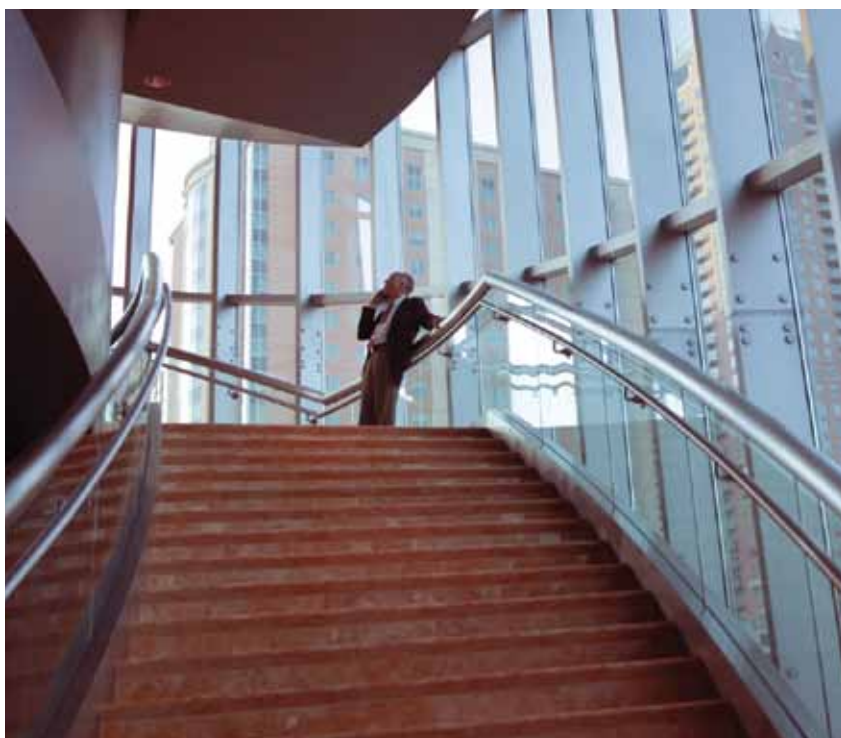
**Dennis Whyte**, Director of the MIT Plasma Science & Fusion Center

# Innovation

CERAWEEK 2015 closed with a keynote dialogue with **Walter Isaacson**, author of *The Innovators: How a Group of Hackers, Geniuses, and Geeks Created the Digital Revolution*; *Steve Jobs*; and *Albert Einstein*. In a wide-ranging and forward-looking discussion, Isaacson discussed the sources of creativity and innovation, the importance of collaboration, individuals versus groups, and the optimistic implications for the energy future.



**Walter Isaacson**, President & CEO, The Aspen Institute



# IHS Energy CERAWeek By the Numbers

- **2,800+** delegates, including senior managers, governmental officials, and thought leaders
- **815+** organizations representing over **60** countries
- **300+** speakers on energy, strategy, markets, finance, economics, geopolitics, and technology innovation

*“...IHS CERAWeek is recognized as one of the largest and broadest energy conferences....CERAWeek brings together energy industry insiders, lawmakers and government officials, analysts and reporters and more from across the US (and beyond)...”*

– Platts



# Insight Dinners

Insight Dinners offered relaxed and informal interaction on timely themes. Distinguished officials and experts provided opening comments, followed by moderated discussion among dinner participants.

## Insight Dinners included:

- Russian-Western Relations in a Time of Uncertainty
- Asia: Still the Promised Land for New Energy Investment?
- Securing Energy Infrastructure: Risks and Emerging Responses
- Sustainability in a World of Low Oil Prices
- The Future of Energy Innovation: The Challenge of New Technologies
- Sustaining Human Capital Through the Cycle: Learning from the Past, Building for the Future
- Conversation with **Ernest Moniz**, US Secretary of Energy



**Jin Yong Cai**, EVP & CEO,  
International Finance Corporation



**Daniel Sullivan**, US Senator, Alaska



**Jerre Stead**, Chairman & CEO, IHS

# Insight Dinners



- The Fossil Fuel Divestment Movement and the “Carbon Bubble”
- Canada’s Role in the Rising North America Energy Powerhouse
- The “Great Divergence”: What’s Ahead for the Global Economy?
- Methane Emissions from Oil and Gas: What Can the Industry Do to Build Public Trust?



## Fossil Fuel Divestment and the “Carbon Bubble” Insight Dinner



**Jane Mendillo**, President & CEO, Harvard Management Company (2008-14)



**Maria Zuber**, Vice President for Research, MIT

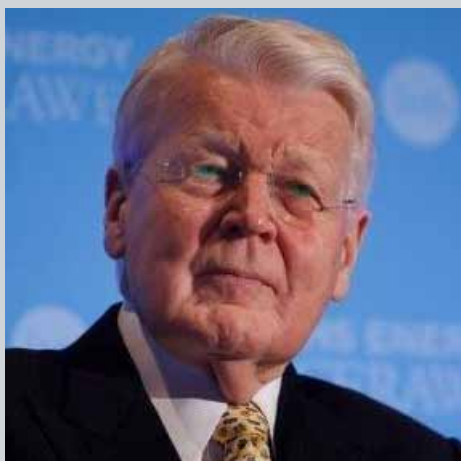


**Antonia Bullard**, Vice President, IHS Energy

# Strategic Dialogues



**Elizabeth Sherwood-Randall**, US Deputy Secretary of Energy, speaking at the "The Future of the Arctic" oil dialogue



**Ólafur Ragnar Grímsson**, President of the Republic of Iceland at the "Sustainability In A World Of Low Oil Prices" dialogue



**Colette Honorable**, Commissioner, Federal Energy Regulatory Commission, "North American Gas: Demand Side Responses to Low Prices" dialogue

Strategic Dialogues featured presentations by industry leaders on a range of timely topics, followed by interactive discussion. Sessions included:

## OIL

- Downstream Strategies in a Low Price Environment
- Russian Oil After Sanctions and the Price Collapse: Can Mature Field Redevelopment Offset the Planned Expansion in Sanctioned Plays?
- New Tricks for Oil Fields
- Opening Doors to Investment: Mexico's Bidding Round One
- Future of Upstream Costs
- Future of the Canadian Oil Sands
- African E&P: Will Major Discoveries Be Successfully Developed?
- Business Models for International Oil Companies: New Strategic Directions
- The Future of the Arctic
- Future of Refining in an Interconnected Global Market
- North American E&P: Imagining the Next Upcycle
- Capital Markets and the Financing of Upstream Investment in a Low Price Environment
- Oil Logistics and Midstream: Capturing New Opportunities
- Operational Excellence in a Shifting Oil Market Environment
- National Oil Company (NOC) Response to a Low Commodity Price Environment: Differentiated Objectives, Differentiated Actions
- Middle East: Turmoil or Stability
- The New Math for Oil: Global Oil Market Outlook

## NATURAL GAS

- Russian Gas: East or West?
- Asia Gas and Power Markets: Searching for the Balanced Approach
- Low Energy Prices: Opportunity or Challenge for the Global LNG Industry?
- Latin America's Gas Markets at a Global Inflection Point – What's Ahead?
- A New Model for Unconventional Gas?
- The Elephant in the Room? The Marcellus, the Utica and the Natural Gas Market
- The Impact of Oil Prices on North American Unconventional Operations
- Gas Monetization in Africa: What Will it Take to Compete?
- Global LNG: New Business Models and Commercial Structures
- Gas Price Reform: Balancing Producer and Consumer Needs
- Gas and Coal in a Changing Energy Mix
- Financing Gas and LNG Through the Cycle
- North American Gas: Demand Side Responses to Low Prices
- Mega Projects – Is Price Relief Finally on the Way?
- Leveraging Operational Excellence to Drive Margin Expansion
- Will Alternative Fuels and Vehicles Survive Low Oil Prices?
- Energy and Petrochemicals at the Interface



**Francisco Diez de Sollano**, Chairman, Energy Regulatory Commission, "Mexico's Power Sector Evolution" dialogue



**Ernie Thrasher**, CEO, Xcoal & XLNG Energy & Resources, "The Marcellus, the Utica and the Natural Gas Market" dialogue



**Irene Nafuna Maloni**, Minister of Energy & Mineral Development, Uganda at the "African Power: Heating Up?" gas dialogue

## POWER

- Mexico's Power Sector Evolution
- EPA's Clean Power Plan Proposal: Industry Perspectives on the Draft CO2 Rule
- Operational Excellence for Utilities
- African Power: Heating Up?
- Texas Power – Leading Through Uncertainty
- Tackling Rising Environmental Challenges in China: The Role of Electric Power
- The Future of Solar
- Investments in Power Infrastructure
- Addressing the Missing Money Problem: Recent Developments in Cost Recovery Efforts
- Renewables in a World of Volatility
- Industry Evolution Continues: How Are Policy Pressures Reshaping the US Power Utility Sector?
- Future of Baseload Generation
- Europe's Power Industry: Mapping Moving Landscapes
- Coal's Role in Emerging Markets
- Challenges and Opportunities for the Power Grid: Evolution of T&D



**Ibraheem Assa'adan**, Executive Director, Exploration, Saudi Aramco, "A New Model for Unconventional Gas?" dialogue



**Alex Klein** (Chair), Senior Director, Renewable Power Advisory Services, IHS; **Anne McEntee**, President & CEO, Renewables, GE Power & Water; **Tejpreet Singh Chopra**, President & CEO, Bharat Light & Power India Pvt. Ltd.; **Ilya Hartman**, North American President & CEO, Acciona Energia; and **Francis O'Sullivan**, Director of Research, MIT, discuss "Renewables in a World of Volatility."

# IHS Expert Briefings

IHS Expert Briefings provide insights on a particular topic by IHS analysts followed by interactive discussion.

## OIL & GAS

- License to Operate and Public BackLash: Shaping Public Attitudes Towards Energy Development
- US Crude Oil Exports: Impact of Shifting Oil Market Conditions
- Can China Rebalance the Global Oil Market?
- \$30 a Barrel – or a \$130: IHS Global Scenarios
- Outlook for Natural Gas Liquids: Impacts from Changes in the Oil Market
- The Future of Conventional Exploration
- Petrochemical Feedstocks: A New Refining Epicenter
- The Future of E&P Equipment Markets: Supplier Risk and Strategies for Mitigation
- Latin America E&P: Execution Challenges
- How Long Will North American Sweet Spots Last?
- Capital Strategies in E&P
- Is a Peak in Global Transport Fuel Demand on the Horizon?
- Future E&P Portfolios and Strategies



## GAS & POWER

- Gas or Coal in Asia's Future Power Generation?
- North American Power Industry: In the Midst of a Fundamental Transformation
- The New Commodity Price Environment – Implications for the European Power Industry
- FSU Power Developments: Where Next for Russia, Ukraine, and Kazakhstan's Electric Power Sectors?
- Middle East and North African Power Trends
- Latin American Gas & Power Trends
- Power Generation Equipment Cost Trends
- North American Power Scenarios: Insights on Risk and Opportunity
- Fuel Prices: An IHS Perspective
- Energy Infrastructure Security: Managing Exposures from Cyber Threats and Violent Risks



# IHS CERAWEEK Receptions



# IHS CERAWEEK Receptions



***“This is the place to be,  
if it is about oil and gas.”***

**– Joe Kaeser, President & CEO, Siemens AG**



**Joe Kaeser**, President & CEO,  
Siemens AG

**Eric Spiegel**, President & CEO,  
Siemens, USA



# IHS Energy CERAWeek Special Programs

## Energy Innovation Pioneers

CERAWeek 2015 celebrated the 10th anniversary of the Innovation Pioneers. This program recognizes companies whose technologies and businesses exemplify innovation, creativity, feasibility and timeliness, scalability and quality of management. The Pioneers represent successful entrepreneurs who contribute to the CERAWeek community – and who are developing future pathways for the industry. Past Energy Innovation Pioneers have achieved remarkable success including IPO's or strategic acquisition.

### 2015 Innovation Pioneers

**AC Kinetics** – Neil Singer, President & CTO

**Alevo** – Jostein Eikeland, Chairman & CEO

**Alphabet Energy** – Matthew Scullin,  
Founder & CEO

**Bidgely** – Abhay Gupta, Founder & CEO

**Fishbones AS** – Eirik Renli, CEO

**Hunt Advanced Drilling Technologies LLC** –  
Todd Benson, CTO

**Gridco Systems** – Naimish Patel, CEO

**Kurion** – William Gallo, CEO

**Liquiglide** – Dave Smith, CEO

**Nuscale Power** – Jose Reyes, CTO

**Petroleum Technology** – Sergey Shumilin, CEO

**Veolia** – Bruce Bishop, VP & General  
Manager, CeraMem

**Veros Systems** – Jim Dechman,  
President & CEO

**Woods Hole Center for Marine  
Robotics Technology** –  
Andy Bowen, Principal Engineer

**Wearable Intelligence** – Yan-David Erlich, CEO

**Zahroof Valves Inc.** – Tony Gioffredi, CEO

### CERAWeek 2015 Alumni Presenters

**Acumetrics** – Gary Simon, CEO

**Alert Enterprise** – Jasvir Gill, CEO

**Liquid Robotics Oil & Gas** – Gary Gysin,  
President & CEO

**NetPower** – Bill Brown, CEO

**Gradiant Corporation** – Anurag Bajpayee, CEO

**Rebellion Photonics** – Allison Lami Sawyer, CEO



**Kristian Bodek**, Director,  
Energy, IHS, Head of the  
Energy Innovation Pioneers  
Program

# IHS Energy CERAWeek Special Programs

## Women in Energy Reception

CERAWeek annually brings together women in energy for informal discussion and networking. The event, hosted by the API, recognizes the growing leadership contributions by women across the industry.



## Future Energy Leaders

This program brings to CERAWeek promising professionals chosen by virtue of their high potential as future leaders of the industry. Future Energy Leaders form a unique community. They benefit from dedicated pre-conference classes as well as engagement in activities and sessions throughout CERAWeek.

**Jack Gerard**, CEO, API (third from left), and **Daniel Yergin** (center) in discussion with emerging energy leaders.



# IHS Energy CERAWEEK Partnership & Membership Programs



## Leadership Circle

The Leadership Circle offers Partners and Members intimate dialogue and focused, highly interactive, off-the-record discussion on key issues shaping the energy future.

- Independents
- Downstream
- Coal
- Technology & Innovation
- Global Power
- Upstream Oil & Gas
- Global Gas

## Energy Partner Informal Conversations – EPIC

Held throughout the week, these informal roundtables bring together Ministers and top officials with CERAWEEK partners and members for relaxed, intimate “Chatham House” style discussions.



## Partner Receptions

Partners host Private Partner receptions in their on-site hospitality suites.



# IHS Energy CERAWEEK Media Coverage & Impact

*IHS CERAWEEK generates broad news coverage in the US and international media.*

- **3,700+** media mentions
- **140+ billion** impressions across **86** countries
- **120 minutes** of live coverage provided by CNBC
- **2,500+** news articles
- **70 million** in social media audience reach
- **250** accredited journalists representing top global media

*“...Judging by the CEO-suite and Minister density, this event is only comparable to the World Economic Forum in Davos.”*

– Frankfurter Allgemeine Zeitung

*“The biggest energy conference in the country, if not the world”*

– PBS Inside Energy

*“For a week each year, a hotel in Houston, Texas becomes the center of the world of energy. Executives from around the globe as well as top government officials descend on the city for the annual IHS CERAWEEK conference.”*

– Inside Energy CNBC



# Strategic Partners

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## Foundational Partner

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# Industry Partners



## Media Partner

THE WALL STREET JOURNAL.

## OFFICIALS

### General Keith Alexander

Director, US NSA Commander US Cyber Command

### Pedro Joaquín Coldwell

Secretary of Energy, Mexico

### Tomas Gonzalez Estrada

Minister of Energy, Colombia

### Amos Hochstein

Special Envoy Energy Affairs, US Department of State

### Colette Honorable

Commissioner, FERC

### Sally Jewell

US Secretary of the Interior

### Ian Macfarlane

Minister, Industry & Science, Australia

### Gina McCarthy

Administrator, US EPA

### Ernest Moniz

US Secretary of Energy

### Senator Lisa Murkowski

Chairman, US Senate Energy Committee

### Henry Paulson

US Treasury Secretary

### Enrique Ochoa Reza

CEO, CFE, Mexico

### Greg Rickford

Minister, Natural Resources Canada

### Adam Sieminski

Administrator, US EIA

### Dan Sullivan

US Senator, Alaska

## EXECUTIVES

### Vagit Alekperov

President, Lukoil

### Greg Armstrong

Chairman & CEO, Plains All American

### Greg Boyce

Chairman & CEO, Peabody

### Stephen Chazen

President & CEO Occidental Petroleum

### Leo Denault

Chairman & CEO, Entergy

### Claudio Descalzi

CEO, Eni

### Robert Dudley

Group Chief Executive, BP

### Robert Flexon

President & CEO, Dynegy

### Miguel Matías Galuccio

CEO, YPF

### Harold Hamm

Chairman & CEO Continental Resources

### Gary Heminger

President & CEO, Marathon Petroleum

### John Hess

CEO, Hess Corporation

### Thad Hill

President & CEO, Calpine

### James Hughes

CEO, First Solar

### Walter Isaacson

Author, *The Innovators* & *Steve Jobs*

### Joe Kaeser

President & CEO, Siemens

### Richard Kinder

Chairman & CEO, Kinder Morgan

### Ryan Lance

Chairman & CEO, ConocoPhillips

### Emilio Lozoya

CEO, Pemex

### Al Monaco

President & CEO, Enbridge

### Steve Mueller

Chairman & CEO Southwestern Energy

### Patrick Pouyanné

CEO & President, Total

### Eldar Sætre

President & CEO, Statoil

### Robert Shapard

Chairman & CEO, Oncor

### Scott Sheffield

Chairman & CEO, Pioneer

### Charif Souki

Chairman & CEO, Cheniere

### Ernie Thrasher

CEO, Xcoal & XLNG, Energy Resources

### Rex Tillerson

Chairman & CEO, ExxonMobil

### Jean-Pascal Tricoire

Chairman & CEO, Schneider Electric

### Pat Vincent-Collawn

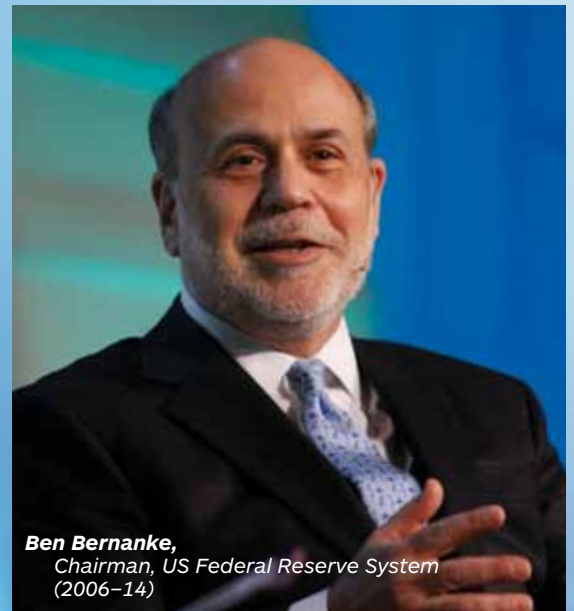
Chairman & CEO, PNM Resources

# Past Featured Speakers

OFFICIALS	EXECUTIVES	
<b>President George W. Bush</b>	<b>Daniel Akerson</b>	<b>Jeffrey Immelt</b>
<b>President Bill Clinton</b>	Chairman & CEO, General Motors	Chairman & CEO, General Electric
<b>Henry Kissinger</b>	<b>Nizar Al-Adsani</b>	<b>Bill Klesse</b>
US Secretary of State	Managing Director, Kuwait Petroleum	Chairman & CEO, Valero Energy
<b>Ben Bernanke</b>	<b>Khalid Al-Falih</b>	<b>Fred Krupp</b>
Chairman, US Federal Reserve	Chief Executive, Saudi Aramco	President, EDF
<b>José Maria Botelho de Vasconcelos</b>	<b>Nick Atkins</b>	<b>Sam Laidlaw</b>
Minister of Petroleum, Angola	CEO, American Electric Power	Chief Executive, Centrica
<b>Mauricio Cárdenas</b>	<b>Leo Birnbaum</b>	<b>Doug Lawler</b>
Minister of Energy, Colombia	Board Member, E.ON	President & CEO, Chesapeake
<b>Richard Fisher</b>	<b>Jin-Yong Cai</b>	<b>Fanrong Li</b>
CEO, Dallas Federal Reserve	Executive VP & CEO, IFC	CEO & President, CNOOC
<b>Richard Haass</b>	<b>Peter Coleman</b>	<b>Zhenya Liu</b>
President, Council on Foreign Relations	CEO, Woodside	President & CEO, State Grid, China
<b>Ashti Hawrami</b>	<b>David Crane</b>	<b>Andrew Liveris</b>
Kurdistan Energy Minister	President & CEO, NRG Energy	Chairman & CEO, Dow Chemical
<b>John Hickenlooper</b>	<b>Charles Davidson</b>	<b>Andrew Mackenzie</b>
Governor of Colorado	Chairman & CEO, Noble Energy	CEO, BHP Billiton
<b>John Kasich</b>	<b>Anthony Earley</b>	<b>Mpho Makwana</b>
Governor of Ohio	Chairman & CEO, PG&E	Chairman, Eskom Holding Ltd.
<b>Cheryl LaFluer</b>	<b>Gregory Ebel</b>	<b>Gerard Mestrallet</b>
Acting Chairman, FERC	President & CEO, Spectra Energy	Chairman & CEO, GDF Suez
<b>Admiral Mike Mullen</b>	<b>Thomas Farrell</b>	<b>Philip Rinaldi</b>
Chairman, US Joint Chiefs	Chairman & CEO, Dominion	CEO, Philadelphia Energy Solutions
<b>Irene Muloni</b>	<b>Bill Gates</b>	<b>Harald Schwager</b>
Minister of Energy, Uganda	Co-Chair, The Gates Foundation	Board Member, BASF
<b>Ali Naimi</b>	<b>Russ Girling</b>	<b>Igor Sechin</b>
Minister of Petroleum, Saudi Arabia	President & CEO, TransCanada	Executive Chairman, Rosneft
<b>Joe Oliver</b>	<b>Andrés Gluski</b>	<b>Frederick Smith</b>
Minister, Natural Resources Canada	President & CEO, AES	Chairman & CEO, FedEx
<b>Takayuki Sumita</b>	<b>Lynn Good</b>	<b>Peter Voser</b>
Director General, METI, Japan	President & CEO, Duke Energy	CEO, Royal Dutch Shell
	<b>Andrew Gould</b>	<b>John Watson</b>
	Chairman & CEO, Schlumberger	Chairman & CEO, Chevron
	<b>James Hackett</b>	<b>Steve Williams</b>
	Chairman & CEO, Anadarko	President & CEO, Suncor
	<b>Lewis Hay, III</b>	<b>Jiping Zhou</b>
	Chairman & CEO, NextEra	President, China National Petroleum Co.

(Partial List)

# Past IHS Energy CERAWeek Speakers



# Past IHS Energy CERAWeek Speakers



**Khalid Al-Falih,**  
President & CEO, Saudi Aramco



**Bill Gates,**  
Co-Chair, The Gates Foundation



**Frederick Smith,**  
Chairman & CEO, FedEx Corporation



**John Kasich,**  
Governor,  
State of Ohio



**Jiping Zhou,**  
President, China National Petroleum Co.



**Igor Sechin,**  
President & Chairman of  
Management Board, Rosneft



**Daniel Yergin** moderates session with **Henry Kissinger,**  
Former US Secretary of State

## Save the Date

*IHS Energy CERAWEEK 2016  
moves to February.*

### Date:

February 22-26, 2016

### Place:

Hilton Americas, Houston, Texas



# 2016: Save the Date

For the latest information on Program and Speakers go to: **[www.ceraweek.com](http://www.ceraweek.com)**

For information about participation in IHS Energy CERAWeek, contact:

Christina Butkiewicz  
email: **[christina.butkiewicz@ihs.com](mailto:christina.butkiewicz@ihs.com)**  
phone: **617-914-0203**

For information on IHS Energy CERAWeek Partnership, Executive Teams and Special Programs, contact:

Todd Szczebak  
email: **[todd.szczebak@ihs.com](mailto:todd.szczebak@ihs.com)**  
phone: **303-858-6053**



*Rex Tillerson, Chairman & CEO, ExxonMobil*





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