GLOBAL ENERGY AWARDS
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SHALE TAKES TOP PRIZE

The winners of the Platts Global Energy Awards

Each year, the Platts Global Energy Awards program provides a microcosm of the world's energy markets; viewing the competitors and winners gives an excellent overview of the year's top stories. The 15th year, which garnered more than 200 nominations from 26 countries, reveals an industry that continues to diversify – in product development, technological advancements, and geographic presence.

The Global Energy Awards judging panel – which includes former national regulators, former heads of major energy companies and leading academics, analysts and legislators – noted a high caliber of entrants, with many non-traditional names staking their claim in several categories. Discussion and debate prevailed as two categories ultimately rewarded multiple winners.

Three stories dominated the discussions this year: Asia remains the global engine of demand growth across the board, and China is dominating with its elegantly negotiated cross-border deals. CNOOC, one of the largest producers of crude and natural gas, leads the way in investing globally. Its deal with Nexen represents China's biggest-ever overseas energy acquisition, and earned the company a Strategic Vision Award this year.

Second, solar continues to be a big story, with the resource rapidly approaching grid parity; prices have dropped significantly in recent years, and continue to decrease. Two solar-focused companies received Global Energy Awards this year, but the energy source appeared as a component of the business efforts of multiple winners.

Finally, shale has led to a major rise in the United States' natural gas production, specifically in the Bakken formation, thanks to the development of hydraulic fracturing and horizontal drilling technology. Shale's dominance is reflected in the Global Energy Awards, which designated Continental Resources as Energy Company of the Year and its CEO, Harold Hamm, as winner of a Strategic Vision Award. Together, Continental and Hamm are the "Best Picture/Best Director" winners in what many call the "Oscars of the Energy Industry."

The Global Energy Awards do not simply reflect the industry's success in the prior year; they indicate the direction in which the industry and its leading thinkers are headed. For their corporate and individual leadership, innovation and superior performance, Platts is proud to honor the 2013 recipients of the Global Energy Awards.

Energy Company of the Year

Continental Resources

United States

Traditionally the most sought-after award in Platts' annual competition, the Energy Company of the Year Award recognizes firms that exemplify leadership and innovation. This year's winner, United States-based independent oil producer Continental Resources, demonstrated those qualities in both its financial growth and its innovative spirit.

Based in Oklahoma City, Continental is focused on the exploration and production of onshore oil-prone plays and is a top independent oil producer in the United States. Under the leadership of Chairman & Chief Executive Officer Harold Hamm, Continental has a long and successful history of developing its industry-leading leasehold and production in the nation's premier oil play, the Bakken of North Dakota and Montana, as well as significant positions in Oklahoma in its recently discovered SCOOP play and the Northwest Cana play. In 2013, Continental will celebrate 46 years of operation.

In 2012, Continental estimated that the Bakken and neighboring Three Forks reservoirs collectively hold 24 billion barrels of potentially recoverable crude oil equivalent – 20 billion in oil and four billion in natural gas. Concurrent with an increase in production and addition to proved reserves, Continental realized significant operating efficiencies through improving cycle times, lowering completion costs, and transitioning to pad drilling in the Bakken play.

Continental focuses its exploration activities in large new or developing plays that provide it the opportunity to acquire undeveloped acreage positions for future drilling operations. The company has been successful in targeting large repeatable resource plays where horizontal drilling, advanced fracture stimulation and enhanced recovery technologies allow it to economically develop and produce crude oil and natural gas reserves from unconventional formations.

Continental plans to uphold the financial flexibility afforded by its strong balance sheet while pursuing growth; in October 2012, the company announced a new five-year growth plan to triple its production and proved reserves. As its production grows, Continental is optimizing takeaway capacity and implementing competitive marketing strategies to bring its high-quality crude oil barrels to premier markets.

Continental has a justifiably proud culture of bravery, entrepreneurial spirit, and innovative leadership exemplified by Hamm, who is this year's winner of the Strategic Vision Award in the CEO category. Continental's first-mover advantage in the Bakken, where it boldly experimented and deployed cutting-edge technology, enabled the company to amass the most commanding acreage position in what is now recognized ▶

as one of the largest contiguous oil fields discovered worldwide in more than 40 years. For its starring role implementing the latest technology in the year's biggest location, Global Energy Awards judges are pleased to name Continental Resources the 2013 Energy Company of the Year.

Strategic Vision Award

Chief Executive Officer

Harold Hamm, Continental Resources
United States

Continental Resources' Chairman & Chief Executive Officer, Harold Hamm, is this year's winner of the Strategic Vision Award in the CEO category. He is a man on a mission: to bring America to energy independence within the next decade.

Hamm, born in Enid, Oklahoma to sharecropper parents, is the youngest of 13 children. He got his start pumping gas and fixing flats at a local service station before heading to work in the region's oil fields as a teenager. In 1967, at the age of 21, he established his own company and set off in search of America's big oil fields. Hamm's dream was first realized with Continental's discovery of Ames Hole, which is the largest oil producing astrobleme in North America, and continued with Cedar Hills, the first field developed entirely by horizontal drilling. But it was the decisiveness of Continental's entry into the Bakken that established Hamm as a major player and resonated most with the Global Energy Awards judges.

Hamm and his team had learned through experience that the stubborn rocks in the Bakken region demanded sophisticated technology and significant capital investment, but showed excellent potential. Inspired by 2003's startling results from a combination of horizontal drilling and fracking, Hamm went all in. He deployed an army of landmen to acquire mineral leases on 350,000 acres in the region. Unable to find financial partners, Hamm began to drill.

In addition to his role as Chairman and CEO of Continental, Hamm is Chairman of Hiland Holdings. He co-founded and serves as Chairman of the Domestic Energy Producers Alliance, which aims to preserve the millions of jobs and billions of dollars in economic activity and tax revenues generated by onshore drilling and production activities within the United States. He is also dedicated to preparing the next generation of industry leaders. In 2012, he helped establish the Harold Hamm School of Geology and Geological Engineering at the University of North Dakota.

The judges noted that Hamm did not accept America's conventional view of energy scarcity over the past several decades, which dictated that as domestic supplies of oil and natural gas dwindled, the country's options were to increase imports or shift focus to natural gas shale development. Instead, he applied his knowledge, intuition, and exploratory spirit to pursue large, crude oil-dominated plays. His extraordinary prescience extends beyond Continental; Hamm believes that America can be energy-independent by 2020, a goal many experts have deemed attainable. The judges for Platts Global Energy Awards salute Hamm for rising from sharecropper's son to corporate CEO while retaining the heart of an entrepreneur.

Strategic Vision Award: Lifetime Achievement

The Lifetime Achievement category of the Global Energy Awards is not a winner-take-all; this year's judging panel felt strongly that three nominees surpassed the threshold and earned the honor based on their body of work. This year's three winners chose three very different paths through the energy industry: they include a utility executive, a regulator, and an engineer. Diverse though the winners may be, they showed similar characteristics of leadership and vision within multiple industry contexts.

Strategic Vision Award

Lifetime Achievement

Jim Rogers, Duke Energy
United States

Jim Rogers, Chief Executive Officer of Duke Energy, personifies the forward-thinking CEO who has profound impact within his companies and throughout his industry. His career is a series of "firsts," leading the way with his high-visibility stance on major issues such as nuclear power, market deregulation and emissions trading.

Rogers is retiring as chairman, president and CEO of Charlotte, North Carolina-based Duke Energy, the largest electric power holding company in the United States with more than $110 billion in total assets. He became president and CEO of Duke Energy following the merger between Duke Energy and Cinergy in 2006. Before the merger, he served as Cinergy's chairman and CEO for more than 11 years. Prior to the formation of Cinergy, he joined PSI Energy in 1988 as the company's chairman, president and CEO.

In his time at Duke Energy, Rogers has restructured the company into a leading "pure play" electric utility holding company. He spun off all of the company's natural gas operations into a new, investor-owned company called Spectra Energy; sold the Commercial Marketing and Trading Business; closed or sold Duke's proprietary trading operations; and repurchased $500 million in stock before orchestrating the Progress Energy merger. Rogers' leadership at Duke has been lauded for balancing the "triple bottom line" of people, planet and profits.

Rogers has served 25 years as a CEO in the utility industry, during which time he has delivered an average total shareholder return of more than 12% per year. He is now considering two career options; teaching at the John F. Kennedy School of Government at Harvard, or becoming a social entrepreneur, working to bring electricity to the 1.3 billion people in the world who have none. "I want to change people's lives in a fundamental way," Rogers said. The judges feel that, as a visionary and a pioneer with profound impact on the energy industry, this Lifetime Achievement Award winner is already well on his way to accomplishing that goal.

Strategic Vision Award

Lifetime Achievement

Michael Peevey, California Public Utilities Commission
United States

A different perspective on leadership comes from Michael Peevey, currently President of the California Public Utilities Commission (CPUC). As the state's lead regulator, Peevey developed and implemented a creative, ▶

forward-thinking strategy to repair California's troubled utility climate, earning him worldwide respect and recognition. One judge referred to him as "the steady hand that steered the ship to safe waters" in weathering California's unique struggles as well as the challenges common to many industry energy professionals: nuclear power, market deregulation and climate change.

Peevey is currently in his second six-year term as head of CPUC, one of the country's most influential regulatory agencies; Californians spend more than $50 billion annually for services from industries regulated by the agency. He joined CPUC in 2002 after a long and storied career in the energy industry, first at Edison International and Southern California Edison Company, then at NewEnergy, Inc.

Energy efficiency is Peevey's hallmark. Under his leadership at CPUC, California created a groundbreaking Energy Action Plan, which lays out a single, unified approach to meeting California's energy needs. He was instrumental in creating California's first Long Term Energy Efficiency Strategic Plan, which presents a single roadmap covering government, utility, and private sector actions necessary to achieve maximum energy savings in the state.

Peevey is a strong supporter of renewable energy. Under his watch, the CPUC implemented the California Solar Initiative, which has a goal of installing 3,000 megawatts of new customer solar projects by 2016. Peevey also oversaw the implementation of one of the most ambitious renewable programs in the country, now requiring utilities to procure 33% of their power from renewable sources by 2020.

The judges recognized in Peevey a champion of the environment and a leader in establishing innovative policies to mitigate climate change. With his own unique brand of strategic vision, Peevey has changed California for the better.

Strategic Vision Award
Lifetime Achievement
Bipin Vora, UOP LLC, A Honeywell Company
United States

Engineering genius Bipin Vora caught the attention of the judges immediately with his Strategic Vision mission statement: "Spreading cheer in humanity through innovations in process technology and efficient use of resources leading to sustainable growth and development." Simply put, Vora is recognized globally for developing safe and environmentally friendly petrochemical processes.

As an engineer and an inventor, Vora has made countless impactful contributions that changed the energy industry from the ground up, earning him 92 patents in the United States and 200 internationally, and has authored more than 140 publications in various technical and trade journals. His technological innovations set new standards for performance, and put petroleum on the map of many industries.

Vora spent 39 years at UOP LLC, A Honeywell Company, and continues to advise them on R&D and marketing matters. The company has a 100-year history as an international supplier and licensor for the petroleum refining, gas

processing, petrochemical production and major manufacturing industries. Today, more than 60% of the world's gasoline and 85% of biodegradable detergents are made using its technology.

Products produced today employing technologies developed under Vora's leadership from 1967 to 2006 are valued at more than $10 billion per year. At UOP, Vora worked in Experimental Development, Technical Services, Process Design, and R&D. He was a director of all R&D programs related to Olefins and Detergent processes and in 2001 was named a UOP Fellow, the company's highest technical position.

Vora has been credited to leading development and commercialization of several new process technologies, namely UOP OleflexTM process for propane and isobutane dehydrogenation, high conversion UOP PacolTM, UOP DeFineTM and UOP/Cepsa DetalTM alkylation processes for the production of linear alkylbenzenes, UOP InAlkTM process for high octane gasoline, and UOP/Hydro MTOTM process for conversion of methanol to ethylene and propylene.

The judges applauded Vora's contributions to petrochemical-derived processes, which have certainly spread cheer throughout humanity – and done so while adhering to the basic principles of safety, environmental protection and sustainability.

Strategic Vision Awards

Rising Star – Company

Nodal Exchange

United States

A new company entering an established market is well served if its leaders are adept at repackaging challenges as opportunities. This is one of the core strengths of Nodal Exchange, the company selected by judges as this year's Rising Star. North America's organized wholesale electric markets present thousands of distinct price locations, or nodes; the markets' complexity and the associated technological sophistication of the systems required to serve them had prevented the development of adequate forward markets to supply liquidity and allow complete hedging of power portfolios. Enter Nodal Exchange, which launched its trading platform in 2009.

Based in Vienna, Virginia, privately held Nodal Exchange is staffed by management, employees, and advisers with extensive experience in the power and financial industries. The company is the first commodities exchange dedicated to offering locational (nodal) futures contracts and related services to participants in the organized North American electric power markets. The company allows its participants to trade cash-settled, fully standardized contracts in a cleared market, enabling market participants to effectively manage basis and credit risk. The company offers more than 1,000 contracts on hundreds of unique locations in the RTO/ISO markets and is a designated contract market regulated by the CFTC with all contracts cleared by LCH.Clearnet Ltd.

The company has grown significantly, obtaining a market share of over 25% of all cleared North American power futures contracts, measured by open interest, as of August 31, 2013, with a year-to-date trading volume that is double the same period of 2012. The company credits its growth to its employees and ▶

constituents, including LCH.Clearnet, 21 clearing members, 9 brokerages and over 80 signed participants. Nodal recently received approval from the United States Commodity Futures Trading Commission to be registered as a Designated Contract Market. In the future, the company intends to further expand its product offerings and also extend its services to other market regions in the United States and Canada.

The Rising Star category, with many outstanding companies on the road to becoming major industry players, brought out vigorous debate among the judges. However, the Global Energy Awards judges all praised Nodal Exchange for maximizing the opportunities presented by the Dodd-Frank Act and the global trend toward deregulated markets in transmission. The company's innovation has resulted in astounding growth, evolving from no open positions at launch to claim significant market share in a highly competitive environment. Nodal Exchange has established a business premise that many feel will soon become an accepted industry standard as it continues to innovate to meet the changing needs of the marketplace.

Strategic Vision Awards

Rising Star – Individual

Sheldon Kimber, Recurrent Energy

United States

It is fitting that the Individual winner of this year's Rising Star Award powers a company that's powered by a star. The sun provides our planet's most abundant energy resource; 173,000 terawatts of solar energy strikes the Earth continuously, more than 10,000 times the world's total energy use. And Sheldon Kimber is putting it to work.

At age 35, Kimber is the Chief Operating Officer of Recurrent Energy, a mainstream clean energy company with a fleet of utility-scale solar plants that provide competitive clean electricity. The company boasts a 2 GW project pipeline and more than 700 MW of signed contracts spanning the U.S. and Canada, representing one of the largest solar development portfolios in North America.

After extensive experience in traditional energy, including five years at Calpine working on gas-fired power projects, Kimber joined Recurrent Energy shortly following its founding in 2006. He has helped manage the company's transition from a small-scale rooftop developer with 12 employees to an industry-leading utility-scale developer with more than 125 employees across multiple global offices. He currently leads all project development, engineering, procurement, construction, operations, and origination activities. The company has 260 MW of solar projects in operation, delivering electricity to some of North America's leading utilities and large energy companies. Poised for an historic year, the company plans to complete an additional 315 MW of projects in 2013, bringing its total operating portfolio to well over half a gigawatt.

Kimber played a key role in Recurrent Energy's sale to Sharp Electronics, which acquired the company in 2010 for $305 million. Now, as governments around the world scale back clean energy subsidies, many solar companies are struggling; Recurrent Energy, however, is thriving. It recently announced that Google and KKR are making an investment in six solar photovoltaic

facilities that are currently being developed and will be managed by the company. The facilities have a combined production capacity of approximately 106 megawatts and will provide clean electric power to local utilities and municipal offtakers under long-term Power Purchase Agreements.

Kimber is respected by his peers for his keen ability to assess market trends and make sound strategic decisions. His unique voice stands out among energy executives as he sets a new course for competitive, clean solar power capable of competing in mainstream energy markets. The judges were unanimous in their selection of Kimber as this year's Rising Star: Individual, calling him a go-getter, a sharp decision-maker, and a quick mover. He is on a trajectory for success as he and Recurrent Energy lead the way to a new era of clean, competitive, mainstream power.

Strategic Vision Awards

Deal of the Year

CNOOC Limited

China

Energy industry mergers and acquisitions were major news last year. But one deal stood out head and shoulders above the rest: in July 2012, CNOOC Limited announced its $15.1 billion acquisition of Canadian Energy Producer Nexen Inc. This massive, cross-border transaction represented China's biggest-ever overseas energy acquisition.

CNOOC is China's largest producer of offshore crude oil and natural gas and is one of the world's largest independent oil and gas exploration and production companies. It mainly engages in exploration, development, production and sales of oil and natural gas, with major domestic operations as well as overseas oil and gas assets in Asia, Africa, North America, South America and Oceania. Its metrics are astounding: in 2012, the company claimed more than 10,000 employees, oil and gas production of 342.4 million BOE, and ownership of net proved reserves of approximately 3.49 billion BOE, with average daily net production of 935,615 BOE.

CNOOC's acquisition of Nexen, which received broad support from common shareholders, was completed in February 2013. The deal brought several benefits to the company; Nexen provides a critical new base for overseas development, with rich resources and a diversified asset portfolio, run by veteran management and staff with extensive working experience in major oil and gas producing areas around the world. Together, these elements are essential to CNOOC's near-term and mid-to-long term development.

The road to integration was not without its obstacles, which included obtaining government approvals on the acquisition; integrating two entirely different corporate cultures; analyzing the effectiveness and synergies of the acquisition to Nexen and Canada; and determining impact of the acquisition to the communities where Nexen's projects are located. The seven-month negotiation, led by CNOOC CEO Li Fanrong, surmounted global challenges and specifically stressed on the intangible benefits the deal would bring to Nexen shareholders and employees, Canada, the United Kingdom, the United States, and other countries in order to win approval from shareholders and regulatory bodies. ▶

Following the acquisition, management is working to ensure a smooth integration process and cultivate a new corporate culture that represents the core values of the two companies. Nexen has already begun to move the needle, contributing 24.8 million BOE to the company's total net oil and gas production from March to June 2013. During the period, the company's total net oil and gas production rose 23.1% year-on-year to 198.1 million BOE. Without Nexen's production output, the production growth of CNOOC was 7.7%.

Judges noted that the deal boosted CNOOC's growth potential - expanding the company from conventional to unconventional resources and adding exploration and production assets - while generating synergies for the its existing operations. CNOOC "executed magnificently," noted one judge. "It's the kind of deal that changes geopolitics."

Industry Leadership

Electricity Generation

Korea Southern Power Corporation Limited

South Korea

Over the past five years, South Korea, traditionally a major energy importer, has increased its investment in renewable energy to reduce its reliance on foreign oil. In the process of improving its domestic energy situation, government-owned Korea Southern Power Corporation Limited (KOSPO) has exhibited exceptional industry leadership in the energy generation field: developing cutting-edge alternative fuel resources and power generation technology that affords the company the ability to scale globally.

KOSPO is one of six wholly owned electricity generation subsidiaries of Korea Electric Power Corporation, which generate substantially all of Korea's electricity. The company is the country's largest thermal power generation company, in terms of 2012 total generation capacity, sales volume and revenue. In order to respond to global climate change and to promote the creation of a new growth engine in the energy sector, KOSPO has pursued projects in the fields of renewable energy, greenhouse gas capture and reuse, and coal by-products recycling. Such efforts resulted in KOSPO securing the top spot in the Korean power sector, with the largest capacity in renewable generation facilities.

Among KOSPO's groundbreaking developments was its new power plant combustion technology, currently in place at the company's 1,000 MW-capacity Samcheok Green Power Plant, which was specifically designed for carbon emissions reduction. The plant is the first of its kind in the world to be dedicated to low-rank coal combustion, which provides more efficient combustion of lower grade coals. The judges found this particularly notable, given the difficulties faced by many carbon-capture facilities.

KOSPO also continues its R&D in greenhouse gas reduction through its own internationally patented carbon capture and reuse technology. Judges were impressed by the company's ability to scale its greenhouse gas capture facilities, one 0.5 MW-class and one 10 MW-class, with impressive plans to reach 300 MW by 2015.

Perhaps KOSPO's most impressive achievements include its efforts in wind

power generation. The company is developing Korea's first and largest offshore wind project, located off of the southwestern coast. The 2.5-gigawatt offshore wind farm, worth $9 billion, will be built in three phases and is slated for completion by 2019. It is destined to transform electricity for the entire country.

The Global Energy Awards judges applauded KOSPO's main priority – providing a stable supply of domestic energy – as well as its efforts to develop power generation technology, invest in green technology and alternative fuel resources, and develop overseas. Through these efforts, KOSPO assures a sustainable future while strengthening its position in the global markets and helping achieve its long-term goal: to be a top global power company.

Industry Leadership:
Exploration & Production

Anadarko Petroleum Corporation
United States

Texas-based Anadarko Petroleum is among the world's largest independent oil and natural gas exploration and production companies, with 2.56 BBOE of proved reserves at year-end 2012. The company, which employs more than 5,300 worldwide, boasts a deepwater exploration/appraisal success rate of approximately 70%, well above the industry average of just under 50%.

Anadarko has operations in the Rocky Mountains, the southern United States and the Appalachian Basin. It is among the largest leaseholders in Africa and is a deepwater producer in the Gulf of Mexico, with additional producing assets and exploration opportunities worldwide. But the big story that caught judges' attention was in Mozambique, in water depths of approximately 5,000 feet.

In 2006, Anadarko signed an agreement with the Government of the Republic of Mozambique for the Offshore Area 1 in the deepwater Rovuma Basin. Four years later, it drilled its first discovery at the Windjammer project, a massive natural gas accumulation with more than 480 net feet of natural gas pay, and a gross column of more than 1,200 feet. Since that time, Anadarko and its partners have safely drilled more than 20 successful wells in the area, including two major complexes, Prosperidade and Golfinho/Atum, which combined hold an estimated 35 to 65-plus trillion cubic feet of recoverable natural gas.

Anadarko's success continued in 2013, with new massive natural gas discoveries at Espadarte and Orca. The collective size of the discoveries represents enormous potential for Mozambique to become a major exporter of LNG. Benefits for the country could include substantial revenues, long-term foreign investment, training and employment, investment in infrastructure, and growth in business and enterprise capacity, as well as the potential to provide natural gas for domestic consumption and industry.

The company deems Mozambique a transformational opportunity, given that the project offers potential to produce 50 million tonnes of LNG per annum, or 20% of current global need. Mozambique, which previously had no LNG production, could rise to become the world's third-largest LNG ▶

exporter. Developing this massive LNG park will likely require the largest foreign investment in Mozambique's history. Anadarko estimates the gross investment for the first phase of the project will be around $15 billion, exceeding the country's total GDP. But this Industry Leadership Award winner is confident that its drilling experience, combined with its professional courage and exploration culture, will help achieve its goal of delivering a cleaner-burning fuel source to global markets, beginning in 2018.

Judges were particularly impressed that though Anadarko's project in Mozambique was "risky, big, and extremely remote," the company exhibited a phenomenal logistical demonstration – one that, impressive as it is today, is destined for even greater global implications in the near future.

Industry Leadership

Grid Optimization

Bonneville Power Administration
United States

Exhibiting a groundbreaking business process that seems destined to become industry standard is a true sign of industry leadership. The Bonneville Power Administration (BPA) has developed one such process in its synchrophasor program, which enables the agency to instantly evaluate the qualities of its power generation and adjust the amount of power on the grid accordingly.

BPA is a federal agency based in the Pacific Northwest under the United States Department of Energy. BPA markets wholesale electrical power from 31 federal hydroelectric projects owned and operated by the U.S. Army Corps of Engineers and Bureau of Reclamation, one nonfederal nuclear plant and some small nonfederal resources. BPA supplies about one-third of the electric power used in the Northwest. The agency owns, operates and maintains about 75% of the region's high-voltage transmission system. It promotes energy efficiency and renewable energy, and integrates renewable resources, such as wind energy, into its grid. As a self-funding agency, BPA recovers its costs by selling wholesale power, transmission and related services at cost.

Global Energy Awards judges found much to admire in BPA's synchrophasor program, which the agency completed in 2013. Synchrophasors are precise grid measurements taken from Phasor Measurement Units (PMUs). PMUs measure voltages, frequency, current, active and reactive power, and stream measurements to a control center 60 times per second. All measurements are time synchronized to a microsecond using GPS, providing an unprecedented view of the power system's dynamic state. BPA's system is the largest, most sophisticated synchrophasor network of any utility in North America, and the only one designed specifically for power system control capabilities.

BPA is now collecting 137,000 measurements from across the grid every second, requiring the development of intelligent data mining capabilities to make sense of a terabyte of data generated each month. Thanks to the inflow of data, BPA has improved its view of power system stability issues, such as power

oscillations that can lead to large-scale power outages. The agency expects to avoid at least one large-scale outage in 40 years, at a conservative estimated value of $1.2 billion to $3.5 billion. The agency is also collaborating with wind power plant operators in the region to expand PMU coverage. It has almost 5,000 MW of wind generation connected to its control area today, and expects that PMU data will help address large-scale wind integration challenges.

BPA's investment in synchrophasor technology is expected to provide significant value to the agency, northwest electric utilities and electric ratepayers. Judges were impressed with the value as well as the scale of the project, as well as the amount of wind integrated, noting that BPA's efforts are destined to become industry standard.

Industry Leadership

Midstream

Puma Energy
Switzerland

In selecting the winner of the Industry Leadership Award for Midstream, Global Energy Awards judges found the numbers for one company leapt off the page: Puma Energy. The company handles more than 22.5 million M^3 of oil products annually, with 14 million M^3 sold via a network of 56 bulk storage terminals, 24 airports and 1,500+ service stations resulting in $13 billion revenue in 2012. Puma Energy is huge, and it is "full of smart people looking for advantages and gaining an edge," said one judge.

Puma Energy is a global integrated midstream and downstream oil company. Formed in 1997 in Central America, Puma Energy has since expanded its activities to more than 6,000 employees in 35 countries across five continents. The company's core activities in the midstream sector include the supply, storage and transportation of petroleum products, underpinned by investment in infrastructure that optimizes supply chain systems, capturing value as both asset owner and marketer of product.

Puma Energy is the world's largest operator of bulk storage terminals; its 56 sites provide traders, wholesalers, oil majors and other customers with access to over 4.5 million M^3 of storage. The company's refining assets include two refineries acquired from ExxonMobil: a 20kbd refinery at Managua, Nicaragua, and a controlling stake in a 22kbd refinery in El Salvador. Its downstream activities include the distribution, retail sales and wholesale of refined products, as well as products in the lubricants, bitumen, LPG and marine bunkering sectors.

Judges were struck by the company's extreme business locations: where other oil companies have moved out, Puma Energy has moved in. The company operates in remote, demanding, climatically challenging, and sometimes potentially dangerous environments, where it operates with sustainability and safety in mind. Its business in emerging markets often involves creation of the infrastructure required for it to operate, so the company often partners with state-sponsored organizations to improve road networks, ports and storage facilities. The company calls this strategic practice "over-investing in assets;" it does not shy away from investing in innovation where the ▶

long-term benefits can be justified. Puma Energy also sets its own standards for regulatory oversight, rescue services, health, safety and environmental requirements in parts of the world where these operations are often lacking, taking international best practice as a benchmark.

Judges were intrigued by Puma Energy's efficiency despite the ambitious nature and impressive scale of its operations. The company's total sales are expected to reach over $13 billion in 2013. Puma Energy aims to become the leading fuel storage and distribution company in its markets, and to continue its fresh and dynamic approach to providing oil products to parts of the world where they are most needed.

Stewardship Award

Corporate Social Responsibility

Manila Electric Company
Philippines

Corporate social responsibility (CSR), for any company in the energy industry, generally denotes a program of sustainability: protecting both the people and the resources, in both the short-term and the long-term. One company stood out this year by not just establishing a philanthropic effort towards sustainability, but also integrating social responsibility into the heart of its business model – which is what the Stewardship Award for CSR aims to recognize.

The Manila Electric Company (Meralco) is the largest electric distribution utility in the Philippines, powering more than 5 million customers in its 9,337 km franchise area. The company services approximately 25% of the total Philippine population. It generates about 50% of the Philippine GDP and accounts for nearly 55% of Philippine energy sales.

Meralco recorded record levels in sales, operational and financial performance in 2012. Its sales revenues reached $6.8 billion with market capitalization at year-end 2012 of $7.2 billion. As the company evolves into a total energy solutions provider from being a power distributor, it has aligned its CSR initiatives with its corporate efforts – focusing on showing its malasakit, or genuine concern for others, to its three Cs: Customers, Community and Country.

Meralco's core CSR initiative is its Community Electrification program, which gives the area's poorest families access to electricity with little to no application fee. Meralco's efforts have electrified more than 8,000 families from its franchise area. Besides providing the families with lower monthly electricity bills compared to the rates of village sub-metering, Community Electrification enables families to run electric appliances, aiding in the establishment of small businesses as well as improving productivity in household chores and farm work. The program has also energized 17 remote island schools using solar photovoltaic energy systems, providing new learning opportunities for nearly 3,000 students. Through this initiative, Meralco has become a "big brother" to local electric cooperatives by modeling electrification schemes that can be sustained by poor and remote communities.

Community electrification is but one of the 1,500 CSR activities the company has enacted in the past decade. It has also

partnered with more than 2,800 organizations and engaged 30,000 individuals, approximately 90% of which are Meralco employees, to volunteer their time and talent. The company estimates its total impact at more than 438,000 citizens, enabling many to rise above the challenges of poverty for the first time.

The company has recently added solar into its electrification, exhibiting an eye toward future sustainability while dealing with the present supply inefficiencies. Meralco's employees are to be commended for their culture of impact – one that continuously challenges and improves the company's own performance, strengthens its efficient use of resources, and values commitment and accountability.

Stewardship Awards

Efficiency Initiative – Commercial End-User

IBM

United States

Judges selected an atypical winner in the Stewardship Award for Energy Efficiency category this year. Historically, the award has recognized companies that enact an energy efficiency plan to protect the environment while strengthening the bottom line. This year's winner, IBM, achieved those objectives – but its commitment to rolling out the changes throughout its entire massive global enterprise, over decades, makes the impact of its changes exponentially greater than most.

Incorporated in 1911, and employing 434,246, IBM is a globally integrated technology and consulting company. The company's 2012 revenue was $104.5 billion, with net income of $16.6 billion and total assets of $119.2 billion. IBM has two principal goals: to help clients succeed by becoming more innovative, efficient and competitive through the use of business insight and information technology solutions; and to provide long-term shareholder value. Environmental sustainability, including energy conservation and climate protection, is a key area in which IBM's expertise, programs and technologies contribute to these goals.

IBM's commitment to energy conservation dates back to 1974, and the company has had a corporate-wide energy conservation goal since 1996. Its current goal is to implement projects to conserve energy equal to 3.5% of IBM's annual energy use. The energy savings goal is pursued in four main categories: typical energy conservation projects such as lighting, HVAC and CUP system upgrades, and time of day management; manufacturing energy efficiency projects in the microelectronics manufacturing and test areas; software and analytics-based energy optimization systems at data center, office and building complexes; and server and storage virtualization and consolidation projects.

In 2012, IBM's energy conservation projects were the result of over 2,670 conservation projects at over 400 locations around the globe. The projects saved 400,000 MWH of energy, equivalent to 6.5% of the company's total energy use for the year, saving $35 million in expense. It also avoided over 155,000 metric tons of CO_2 emissions. Cumulatively, IBM's energy management program has delivered extraordinary savings from 1990 to 2012, reducing or avoiding 6.1 million MWH of ▶

electricity, saving over $477 million, and avoiding 3.9 million metric tons of CO_2 emissions.

IBM's energy conservation program adds real and additional benefits to the business beyond energy use reductions. For example, it often realizes energy use reduction in data centers and manufacturing and assembly operations through improving equipment utilization and reducing cycle times and energy waste in the system.

Judges remarked on its absolute savings program; the company aimed for and achieved a hard cut in energy across its entire enterprise. Energy efficiency is not just wise environmental stewardship – it is good for business as well, and IBM has proven it on a grand scale.

Stewardship Awards

Efficiency Initiative – Energy Supplier

Constellation, an Exelon Company
United States

Even in an environment of lower electricity prices, energy remains one of the top five expenditures for businesses. Current economic circumstances are forcing all businesses to be as lean as possible. And customers are increasingly seeking products and services that are manufactured and delivered in a sustainable way. Baltimore, Maryland-based Constellation, a business unit of Exelon Corporation, attracted judges' attention for its creativity in combining commodity supply deals with long-term energy management programs, and its innovation in both programs and financing structure.

Constellation is a supplier of power, natural gas, renewable energy and energy management products and services for homes and businesses across the continental United States and Canada. Constellation provides integrated energy solutions that help customers buy, manage and use energy, from electricity and natural gas procurement to renewable generation and conservation. More than 100,000 commercial, industrial, public sector, and institutional customers, including two-thirds of the Fortune 100, use Constellation to help strategically manage energy. The company provides nearly one million residential customers with electricity and natural gas plans that can provide price protection, savings and environmental opportunities.

In developing its unique business model, Constellation executives applied their knowledge about the decision making process and challenges business leaders face when considering efficiency upgrades – such as energy efficient lighting, building automation controls, and HVAC upgrades – and the lack of capital funding to make these improvements. Business priorities and economic pressures regularly move facility improvements to the bottom of the priority list. To find a solution to this issue, Constellation combined an electricity supply agreement with an energy efficiency contract, eliminating the capital issue.

Through its unique bundled commodity and energy efficiency solution, "Efficiency Made Easy," Constellation factors the cost of efficiency measures into the price per kilowatt-hour of the customer's electricity bill over the length of their electricity supply agreement. Customers realize an immediate energy

cost savings through a reduction in electricity use, while operating in a more environmentally responsible way. Judges were impressed by the results; from 2011-2013, Constellation's customers collectively reduced CO_2 emissions by more than 166 million pounds.

Judges were impressed that Constellation avoided cross-subsidization and its attendant pricing issues, instead exhibiting impeccable design and implementation in both its programs and its financing structure. Though Constellation's scale has not yet impacted the market in a major way, it has excellent potential to set the course for future markets. "There aren't many programs that deliver supply and also drive efficiency in a single instrument," said one judge.

Stewardship Award

Green Energy Supplier

First Solar, Inc.

United States

Judges agreed that one company dominated the green energy category this year: First Solar. In a cost-competitive environment, the company's nimble approach helped it achieve success without subsidies.

First Solar is a provider of solar energy solutions, aiming for affordability, reliability and accessibility on a global scale. The company manufactures and sells photovoltaic (PV) solar modules with an advanced thin-film semiconductor technology; it also designs, constructs, and sells PV solar power systems that use the solar modules it manufactures. First Solar is the world's largest thin-film PV solar module manufacturer and one of the world's largest PV solar module manufacturers.

In addressing overall global demand for PV solar electricity, First Solar has developed a differentiated, fully integrated systems business that can provide a competitively priced turn-key utility-scale PV system solution for system owners and competitively priced electricity to utility end-users. First Solar's global effort focuses on four main areas: utility-scale power generation through grid-connected bulk power systems; fuel displacement through hybrid solutions that bring together solar and conventional fuels; off-grid and energy access platforms for underserved energy markets; and solutions for restricted spaces.

The company began in 1999, when government subsidies of renewable energy were common. It has since strategically moved away from subsidized markets in order to focus on cost competitiveness. Its unique Levelized Cost of Electricity basis – calculating the total cost of ownership from project development and financing through operations and maintenance over the plant's operational life – enables it to offer electricity costs of between $.07-$.15/kWh, depending on the region and other factors. Incredibly, First Solar's creative approach has rendered its energy cost competitive with conventional generation sources such as fossil fuels.

The company has reached several milestones – achieving world-record research cell efficiency of 18.7% and total area module efficiency of 16.1%, and becoming the first solar company to break the $1/watt manufacturing cost ▶

barrier, produce 1 GW in a single year, and implement a global PV module recycling program. The company boasts a pipeline of over 3 GW of contracted solar power plants and over 7 GW installed worldwide.

First Solar continues to gain traction in its markets and expand its global presence, while continuing to add to its advanced stage project pipeline, one of the largest contracted captive solar pipelines in the world. The company expects to not only maintain but also increase its cost competitiveness at the system level relative to its peers for the foreseeable future. Judges felt that First Solar, in its unique approach to manufacturing costs as well as its creativity in moving from supply modules to becoming a vertically integrated provider of utility-scale systems, elevates the entire solar industry.

Premier Project Award

Construction

GAIL (India) Limited

India

Construction projects in the energy industry can face numerous challenges, including pressures of location, financing, timing and scope. This year's Premier Project Award in the Construction category goes to a company that surmounted those challenges and more to create a key component of its country's national gas grid. GAIL (India) Limited, the largest state-owned natural gas processing and distribution company, earned effusive praise from the Global Energy Awards judges in becoming this year's award winner for its Dabhol-Bangalore Gas Pipeline Construction Project.

Incorporated in 1984, New Delhi-based GAIL works to accelerate the country's use of natural gas. The company was initially responsible for construction, operation and maintenance of the Hazira-Vijaypur-Jagdishpur (HVJ) pipeline, a massive 1,800 km cross-country natural gas pipeline that laid the foundation for India's natural gas market. GAIL has now become an integrated energy major with presence in entire gas value chain, with assets including 10,791 km of gas pipelines, 2,042 km of LPG pipelines, seven gas processing plants, a gas-based petrochemical plant, and a gas-based power generation facility, with additional subsidiaries in the United States and Singapore. It is also pursuing business opportunities in Africa and the Middle East.

Commenced in 2010 and completed in 2013, the Dabhol-Bangalore Pipeline was designed to transport 16 MMSCMD of RLNG from Dabhol LNG Terminal. The pipeline project is a component of the National Gas Grid, acting as a common carrier between western and southern parts of India for companies including Reliance, Shell, PLL and ONGC, thus integrating the country's entire gas market. It has the potential of ushering in a green revolution in the heavily industrialized western and southern region of India, which will have access to environment friendly green fuel for the first time.

The pipeline's unique route snaked through the undulating, monsoon-prone terrain of Western Ghat Mountains, known as the Great Escarpment of India. Such uncertain ground proved costly to build upon; the project encompassed 48 horizontal directional drilling crossings, 11 major river crossings, 276 water body crossings, steep pipeline trenches

approaching a 60-degree slope, 20 railway crossings and 382 road crossings. Logistical coordination efforts included 65 vendors and contractors, and nine million km of vehicle movements for raw materials, pipeline and heavy machinery.

Despite the challenges, the Dabhol-Bangalore Pipeline boasted one million incident-free man days and was completed within three years. The project was also on budget; careful planning and project management, including use of innovative bidding methodology such as reverse auctions for line pipes, achieved cost savings nearing 40%. The judges applauded GAIL's strategic thinking and perseverance in bringing efficiency to India's gas grid.

Premier Project Award

Engineering

Hatch Ltd. & Hatch Mott MacDonald Canada

The winner of the Premier Project Award in the Engineering category is ambitious not only in its dazzling scale, but also in its contribution towards achieving a larger goal. Ontario Power Generation's Niagara Tunnel, located in Niagara Falls, Ontario, Canada, is the largest hydroelectric project completed in Ontario in the past 50 years. The tunnel diverts water from the Niagara River and carries it downstream to the Sir Adam Beck generating complex, propelling water by gravity alone at an incredible 500 cubic metres (17,660 cubic feet) per second, fast enough to fill an Olympic-sized swimming pool in a matter of seconds. This renewable energy initiative was undertaken by consulting engineering firm Hatch, a 2,400-person employee-owned firm focusing on infrastructure, transportation, and environmental engineering.

Construction of the Niagara Tunnel involved the use of "Big Becky," the world's largest hard rock tunnel-boring machine (TBM), which is as high as a four-story building, longer than a football field and weighs in at 4,000 tonnes. The TBM excavated a 10.2-km-long water diversion tunnel between the Niagara River above the Horseshoe Falls and the Sir Adam Beck hydro-generating complex down river. The tunnel is nearly twice the diameter of the Euro Channel railway tunnels, and will deliver an additional 500 M^3's of water to hydro stations, facilitating an increase of 1,500 GWh (13%) in average annual clean renewable and reliable energy production.

Hatch overcame many logistical hurdles on the project. All underground work had to be accessed from a single entrance at the outlet end of the tunnel, so all tunnel operational equipment had to be designed to allow traffic to pass to and from the TBM. Concrete was at times pumped 1.4 km, requiring very precise mix design and quality control. And because the excavation proceeded from the outlet end of the water conveyance to the intake end, which is located immediately below the International Niagara Control Structure in the upper Niagara River, about 2 km upstream of the Horseshoe Falls, preventative measures had to be taken to prevent potentially serious groundwater inflow during TBM excavation.

The Niagara Tunnel was safely completed in March 2013, nine months ahead of schedule and $100M under its $1.6B budget. The tunnel will provide the province with a reliable, maintenance-free source of clean energy for the next 100 years. It is also a key element of ▶

what judges called Ontario Power's "ambitious but attainable" long-term energy plan including closure of the remaining three coal-fired generating stations. The judges unanimously praised Hatch and its Niagara Tunnel for its overall technical complexity, logistical execution, and innovative use of technology.

Leading Technology Award: Commercial Application

The Global Energy Awards' Leading Technology category drew many well-qualified entries this year. After vigorous debate, judges elected to name two winners in the category, to recognize two companies that stood out for their use of technology at both ends of the energy spectrum; one driven by energy production and supply, and one driven by energy consumption.

Leading Technology Award

Commercial Application

Meta Downhole Ltd.
United Kingdom

Aberdeen-based Meta Downhole is a premium downhole isolation company specializing in well integrity. The company provides well isolation solutions across the lifetime of an oil and gas well – from well architecture and design through to completion, production and decommissioning. Meta, a private venture capital-backed company, services an international client base with offices in the United Kingdom, Middle East, Far East and the United States.

Since its founding in 2012, Meta has created a completely new market space in well integrity management. The company was born out of the challenges the offshore oil and gas industry faced post-Macondo, where operators and drilling contractors began to review long-established well integrity practices, with a renewed focus on the safe and reliable containment of well fluids. Meta seeks to redefine well integrity, therefore reducing risk, protecting and maximizing future production, and delivering safe, productive and profitable wells.

Meta's solutions are based around Metalmorphology™, its unique technology that allows metal to be shaped downhole, delivering instant, gas tight, V0 certified and permanent metal-to-metal isolation. The process uses established metal working principles that balance steel's mechanical strength to create solutions that 'morph' together and conform perfectly to the shape of the well. The result is well integrity solutions that last across the well's lifecycle.

Meta's downhole isolation solutions are rigorously tested in the company's testing facilities, among the most advanced of their kind in Europe. With the ability to simulate downhole conditions accurately, Metalmorphology has been proven to deal with axial load-bearing forces of up to 6 million lbs and temperatures of over 320°F.

Through its technology, Meta helps operators reduce risk and ensure that they comply with regulatory standards. It also assists operators in protecting and maximizing future production with minimal well downtime and the building-in of well structural and zonal integrity at the outset of the well. It helps deliver profitable and productive wells through the safeguarding against

predictable trouble zones and weak spots and the ability to optimize productivity from all producing zones.

In a short time, Meta has achieved record-breaking revenues, profits and EBITDA value, as well as building a forward order book in excess of $100 million. Judges were excited by Meta's developments and noted that when materials are at play, the opportunity exists for a ripple effect across multiple industries. Meta's commercially available, technologically proven and innovative products are creating a new market space and opening up a new era in well integrity.

Leading Technology Award
Commercial Application
Caterpillar Inc.
United States

Founded in 1925, Caterpillar is the world's leading manufacturer of construction and mining equipment, diesel and natural gas engines, industrial gas turbines and diesel-electric locomotives. The Peoria, Illinois-based company reported 2012 sales and revenues of $65.875 billion. In such a large company, small changes can have impressive impact; in Caterpillar's case, its compressed-hydraulics approach to hybrids has taken the technology from consumer cars into heavy equipment. Caterpillar's efforts demonstrate the potential far-reaching effects of this technology, which Global Energy Awards judges felt honored the intent of the Leading Technology Award.

The company created its Cat® 336E H Hybrid Excavator by applying three main technologies: it conserves fuel with engine power management, optimizes performance using restriction management, and re-uses energy via the hydraulic hybrid swing, which captures the excavator's upper structure swing brake energy in accumulators, and then releases the energy during swing acceleration.

This hydraulic hybrid technology uses up to 25% less fuel compared to a standard model, and offers up to 50% improvement in fuel efficiency, without sacrificing performance. A 25% fuel consumption reduction yields a savings of 23.6 gallons over an eight-hour shift or potentially more than 5,900 gallons over the course of one year. At $4 per gallon of diesel fuel, this represents a savings of $23,600 per year/machine. Assuming current fuel prices, Caterpillar estimates that customers will recover their incremental hybrid investment in as little as one year, with 18 months typical.

The 336E also produces additional environmental sustainability benefits, such as significantly reduced operating noise and exhaust emissions; it is a quieter, cleaner machine than its ancestors. It is a hybrid that reduces customer costs sustainably, with no negative impact on machine performance. Judges were vociferous in their enthusiasm for the cumulative global impact of a 25% fuel savings on heavy equipment machines that are used across so many industries, worldwide.

Caterpillar is developing additional models featuring its fuel-saving hybrid technology to meet the needs of a global marketplace with varying emissions regulations. Caterpillar expects that its expanding application of the technology will continue producing competitive advantages and commercial gains for the company by increasing sales, revenues ▶

and profits. The company considers the 336E one of its most significant achievements in a long history of engineering innovations – technologically, sustainably and commercially.

Leading Technology Award
Sustainable Innovation
LanzaTech
United States

LanzaTech put sustainability into the 2013 Leading Technology Award for Sustainable Innovation – the company received the same honor in 2011. Judges conceded that winning the award twice in three years is extremely rare; however, they felt strongly that LanzaTech is once again worthy of the honor.

LanzaTech was founded in New Zealand in 2005, with a mission to develop and commercialize technologies for the production of cost competitive, low carbon fuels and chemicals that do not compromise food or land resources. Now headquartered in the United States and operating on four continents, LanzaTech's technology converts local, abundant industrial waste and low cost resources into sustainable, valuable commodities. By using readily available resources, LanzaTech provides a strategically important source of sustainable energy.

LanzaTech captures value from what has long been seen as a waste product. The company transforms carbon-rich waste gases (from industrial sources such as steel mills and processing plants) and synthesis gas (from any biomass resource such as municipal solid waste, organic industrial waste and agricultural waste) into fuel-grade ethanol or chemicals that can be used in the manufacture of new products. By developing a genetic modification system to create a proprietary gas-fermentation microbe, the company has made a dramatic advance along the biotechnology frontier, with a potentially transformational impact on the world's energy industries.

LanzaTech has raised more than $100 million in capital and has a diverse pipeline of products in development: ethanol for use as fuel and as a chemical intermediate; platform chemicals; and hydrocarbon fuels including diesel, jet and gasoline. The company estimates more than 50% of steel mills worldwide use technology that could be retrofitted to include its process, which translates to 30 billion gallons of ethanol or 15 billion gallons of sustainable aviation fuel – about 19% of the current world aviation fuel demand.

LanzaTech is the first company ever to scale gas fermentation technology to a pre-commercial level, developing and successfully operating two facilities that convert waste flue gas from Baosteel and Shougang steel plants into ethanol. Both facilities in China operated at annualized production capacity of 100,000 gallons. Site location and engineering plans for two full commercial facilities are under way, with commercial production expected to begin in 2014.

Judges appreciated that LanzaTech has addressed all three variables that drive the cost of biofuel production: technology, feedstock and transportation. The company is highly efficient, utilizes waste resources, and can be installed at the source of the feedstock. LanzaTech's technology represents new ways to produce fuels that are cost-competitive without subsidies, and products that are critical parts of daily life. ■