

# Game Changers Impacting the US Energy Sector



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# Introduction

A little over a year ago, we published a short article outlining what we viewed as the ten most significant “game changers” impacting the US energy sector. Since then, we’ve taken a deeper dive into those and other rapid developments that are having a profound effect on both the US and global energy industry. In this third volume of “Game Changers Impacting the US Energy Sector”, we look at the policy, technology and globalization opportunities and challenges of the energy sector. We also asked a few of our Firm’s leading energy practitioners to share their insights into key recent developments and attempt to crystal-ball the future of the energy industry.

**Technology is propelling some of the biggest changes in energy.** The global market in energy storage is likely to grow 33-fold over the next 10 years and firms pursuing energy storage technologies should see sustained high demand for their products by utilities, grid managers and others. Smart Grids, Smart Cities and the Internet of Things put us on the precipice of a technological “Big Bang” that could fundamentally change the ways in which we produce, consume and manage energy and resources of all types.

**Government players must decide the rules of the new game.** Regulators debate the future of distributed electricity generation and the statutory ban on crude oil exports in a changing national and global economy, while some utilities are enjoying a “return to relevance” with the support of green government policies. Energy (both production and use) represents the most significant contribution to emissions worldwide, which means that the industry is naturally a target of climate policies, but it also is in a position to be an important part of the solution. Some recent FERC and court decisions in several organized electricity markets in the US are shaking up the jurisdictional divide between the federal regulator and the states. On climate change issues, there is no denying that the Administration’s efforts have moved the issue considerably ahead and, given the challenge, a public focus that will continue to shape US domestic and international efforts for years to come.

**Globalization has changed the ways that energy is consumed and produced throughout the world.** Expect more struggles ahead for many E&P companies who focus on shale oil, deep water oil or oil sands who may face a liquidity crisis arising from the low oil and natural gas prices.

In order to succeed, businesses must start taking steps now to ensure future profitability. Taking advantage of opportunities while navigating the challenges requires creative thinking and new approaches that reshape the traditional models. Dentons’ network of offices in the US and around the world provides you with experienced legal resources—wherever and whenever you need us.

Yours sincerely,

Jennifer Morrissey, Editor





# Quantum Viewpoints: Trends and Projections for the Energy Industry

*In the year since the first article describing our top ten “game changers” was published, Dentons partners Clint Vince and Jennifer Morrissey have been asked repeatedly to speak and to submit articles to various publications taking a deeper dive into those and other game changing developments for both the US and global energy industry. In this third volume of Game Changers Impacting the US Energy Sector, to keep the dialogue current and to reflect the rapidly changing dynamics of the global energy sector, we asked several of our Firm’s leading energy practitioners to comment briefly on key recent developments and to share their thoughts on what they think lies ahead for the energy industry.*

## Participants



**Clint Vince**, co-chair of Dentons’ Global Energy Sector, is based in Washington, DC. He is widely recognized for his cutting-edge counsel and innovative solutions within the energy industry. He was recently named to the National Law Journal’s inaugural list of “Energy & Environmental Trailblazers,” which recognizes the achievements of 50 of the “great minds impacting the crucial intersection of energy production and the environment” and “seeking to balance [the] often conflicting priorities” of conservation and energy generation. His experience includes high-profile litigation and appellate cases, including US Supreme Court advocacy, major project development, and legislative and regulatory advocacy on behalf of public and private clients. [clinton.vince@dentons.com](mailto:clinton.vince@dentons.com)



**Keith Brandt** is the Managing Partner of Dentons’ Central Hong Kong office. His practice focuses on heavyweight dispute resolution, including high court/commercial court litigation, domestic and global arbitration, expert determinations, alternative dispute resolutions (ADR) and mediations with particular experience in the energy, construction and financial services sectors. He has a varied client base and boasts a multinational background operating in many diverse jurisdictions, with particular experience in Hong Kong, mainland China, Taiwan, Singapore, Malaysia, Thailand, the Middle East and the Indian subcontinent. [keith.brandt@dentons.com](mailto:keith.brandt@dentons.com)



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**Ryan Sears** is a partner in Dentons' Houston office. He represents energy clients in a variety of matters, all relating to the exploration for, and production of, oil and gas. He also represents energy clients in various dispute resolution matters, and has advised clients on restructuring and other bankruptcy issues. Additionally, Ryan represents global energy clients in connection with oil and gas exploration and development activities in foreign countries. [ryan.sears@dentons.com](mailto:ryan.sears@dentons.com)



**Noor Kapdi** leads the Dentons' team in Johannesburg. He is a member of the Global Banking and Finance, Global Corporate and Global Energy, Infrastructure and Project Finance practice groups. Noor is an experienced commercial lawyer with particular expertise in oil and gas and private equity. He has extensive experience in all aspects of the oil and gas upstream, midstream and downstream sectors. Noor has also been involved in all aspects of the private equity industry and has established his reputation in the region, working closely with provincial and national governments. He has also served as the deputy chairperson of the Western Cape Investment & Trade Promotion Agency (WESGRO) and as the acting chairperson of the executive committee of the South African Oil and Gas Alliance (SAOGA). He is also a member of the Association of International Petroleum Negotiators (AIPN). [noor.kapdi@dentons.com](mailto:noor.kapdi@dentons.com)



**James Hogan** is a partner working in Dentons' Paris and Baku offices. He is the legacy Managing Partner of the Baku office. He concentrates on corporate, commercial and natural resource matters relating to the CIS and Eastern Europe, with particular emphasis on Azerbaijan, Kazakhstan, the Russian Federation and Ukraine. He is particularly active in the structuring, negotiation and implementation of petroleum, mining and other natural resource projects, and has experience in concessions, oil-field service and drilling contracts, licensing and pipeline and marine transportation issues, including the sale and transportation of LNG. He also frequently advises financial institutions, development banks and investment funds in the areas of investment and secured lending, as well as capital markets work, including Eurobond issues. James is recognized as a leading business lawyer (Mergers & Acquisitions, Oil & Gas) by *Who's Who Legal – Energy* and *Who's Who Legal – CIS*. He is listed as a leading lawyer in the directories *Chambers Global*, the *Legal 500*, *PLC Which Lawyer* and *IFLR 1000*. [james.hogan@dentons.com](mailto:james.hogan@dentons.com)



## What have been the major trends in the energy sector in your practice and region over the past year?

**VINCE (US REGION):** Oil and gas prices have been a huge dynamic force in the US energy industry this year. It was generally expected that gas prices would remain low. This has caused the industry to accelerate retirement of coal-fired generation and has placed some pressure on renewables, particularly in states that do not have renewable portfolio requirements. The plummeting of oil prices was a surprise, and is having sweeping impacts throughout the industry. Most pundits believe that with unusually high inventories, continued high production as a result of improved technologies (despite curtailment of rig count, and continued production outside the US, prices will remain low for some time. The result for the sector is mixed—this will be disruptive for existing industry players who are laying off large numbers of workers; but it also represents a buying opportunity for capital intensive investors.

We also anticipate that distributed generation will become a mega-trend in the near term, especially as battery and other energy storage technologies becomes more commercially feasible. The failure of Congress to renew the Production Tax Credit has been a setback for the domestic wind industry. At the same time, low natural gas prices and aggressive federal regulation have substantially reduced market share for coal, and the nuclear industry continues to be hampered by cost comparisons with natural gas (i.e., high capital costs and currency differentials for components produced abroad).

We believe that there will be an energy efficiency revolution in the US that will continue to flatten growth in demand for traditional utilities. Demand growth is already predicted to be minimal by groups such as the EIA. Outside the US, demand growth in China and other developing countries will have a major impact on virtually all global energy markets, as will their ability to bring new technologies to scale. Additionally, big data will have a tremendous impact on demand for energy globally at the same time that it contributes to efficiency and development of new energy technologies.

The envelope is currently being pushed on electric vehicles and battery storage, but cost and scalability challenges remain to be resolved, at least in the near term.

**ROTH (CANADA REGION):** Oil price volatility and its impact on oil and gas exploration and production activity have had a significant effect this past year. The oil and gas industry is dependent on cash flow, and that, too, has been impacted. Drilling has slowed down a lot through the first half of 2015. Additionally, there is a new focus on cutting costs to increase productivity that we had not seen for a long time, at least on the oil side. Some consolidation of junior producers should occur in the coming months.



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**ZOBRIST (US MIDWEST REGION):** Regulated public utilities have seen continued reductions in their authorized return on equity, as regulators take steps to reduce levels of earnings in light of the soft economic recovery and the failure of the Federal Reserve Board to raise interest rates. There is new skepticism regarding previously granted accounting mechanisms, such as riders and trackers, which can relieve pressure on income statements. Regulators are also exploring whether to deny 100 percent recovery of rate case expenses, even if prudently incurred. Proposals to require utilities to absorb up to 50 percent of those costs are being seriously considered.

**SEARS (TEXAS REGION):** As commodity prices have fallen, companies are reducing capital expenditures and slashing budgets. Large public companies are slashing jobs. Service companies are doing their best to weather the storm.

**HOGAN (EUROPE REGION):** Among the major trends in the past year in the energy sector of Azerbaijan, we have witnessed a flurry of sales of interests in the largest oil and gas projects, and related pipeline and sales assets (most notably, the sale by Statoil of its entire interest in Shah Deniz in separate transactions, in 2014 to SOCAR and BP, and in 2015 to Petronas, as well as the sale in 2014 by Total of its interest in Shah Deniz to Turkish Petroleum). Additionally, there is increasing tendency toward localization of exploration and product and oilfield services activity through policies favoring the use of local staff and the establishment of joint ventures with local companies. The oilfield services sector is undergoing consolidation and there is emphasis by the national oil company, SOCAR, on added value activities and foreign investment.

In Europe at large, focus has been on addressing the security of the supply of oil and gas in the context of the Russian and Iranian sanctions and a worsening geopolitical climate. Progress has been made on the Southern Energy Corridor, i.e., a project to transport gas in 2019 initially from Azerbaijan via the South Caucasus Pipeline Extension through Georgia, then via the Trans-Anatolian Pipeline to Greece, then via the Trans-Adriatic Pipeline to Albania and Italy; and then through interconnectors allowing the supply of gas from within Europe to those countries that are heavily dependent on Russian gas and facing potential supply disruptions. This past year has also seen a movement toward industry consolidation.

**BRANDT (APAC REGION):** In light of China's strong economic growth in recent years, there has been an ever-growing demand for energy which is expected to continue in the future. Growth of companies which produce renewable energy or offer products that relate to renewable energy is particularly strong. This is partially a result of the Chinese Central Government's sustainable energy policy, including diversification of energy resources and reducing the country's heavy reliance on coal and other non-renewable energy resources.

Government measures to increase supply of energy and other resources are also in place, resulting in more acquisitions of mines both in China and overseas, and construction of renewable energy plants.

The Chinese energy section is also facing a market-oriented reform where market forces are in place to allocate resources. Private enterprises are encouraged to develop energy resources, lay oil and gas pipelines and explore new and renewable energy resources.



Are there any key developments or issues on the horizon that may have a significant impact on the energy sector? Are there any developments that you suspect industry participants (including energy companies, regulators, financial institutions and so forth) may be underestimating? Conversely, are there any issues that you think are mistakenly being given too much attention?

**VINCE (US REGION):** Within the next 10 years, as demographics change in the US and as education improves, there will be a huge political push for greater activity to address climate issues. Also, the intensity of cyber intrusion and potential physical disruption of our energy infrastructure will dramatically change the energy paradigm in the US, with a far greater emphasis on distributed generation, smart grids and micro grids.

Further developments and scaling of energy efficient technologies will have a huge impact, as will increased reliance on solar energy. Battery storage and energy storage will likely dramatically improve in the next few years.

The US energy sector is facing challenges related to the imminent retirement of a large portion of its skilled workforce, although we do expect that technological breakthroughs and new applications of existing technology (such as the use of unmanned drones) will mitigate the impact somewhat.

What is likely underestimated is the leadership in scaling-up of industry technology by China and other developing countries that will eclipse much of the activity in the US. For example, while electric vehicles in the US are over-hyped right now, countries like China and India will bring to scale these technologies and change the industry worldwide.

Another underestimated development at present is the shifting geopolitical relationships—along with a GDP shift and resulting consumption shift from west to east—which will have a huge impact on the energy sector. Among other things, there will be short and long-term global consequences of Russia entering Crimea. Europe is re-evaluating its dependence on Russian gas, which will drive Russia to seek new markets, particularly in China and other Asian countries. And consumption shifts will create tremendous new demand for power, which will have huge consequences in terms of supply (of power itself, and the resources required to produce that power), as well as climate impacts.



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**SEARS (TEXAS REGION):** Many upstream energy companies borrow against their reserves, with their credit line being tied to the value of those reserves. When banks re-determine borrowing bases again in October, many companies could find themselves owing their banks significant sums to get back in line with their financial covenants. Those who can't make the payments will be forced to sell or restructure.

**KAPDI (AFRICA REGION):** In 2012 the Department of Energy published new specifications and standards for petroleum products which would bring South Africa's petroleum products up to the 'clean fuels 2' standard. It is estimated that local refineries will require a \$3.5 billion upgrade in order to comply with this standard. The deadline for clean fuel compliance was initially July 2017, although this has been delayed and the new deadline has not yet been announced. During her budget speech on May 19, 2015, the Minister of Energy indicated that the clean fuels initiative will not be used to entrench the positions of some of the companies that operate in the sector to the exclusion of new entrants. She indicated that the Department of Energy is revisiting the clean fuels program and that now is the opportune time for investing in new refining capacity.

It is possible that local refineries will not be in a position to supply petroleum products that comply with the clean fuel standards for a period after the standards are introduced and that some facilities will shut down rather than upgrade to comply with the clean fuel standards. It is therefore likely that South Africa will have to rely on importing clean fuel for at least the initial period after the clean fuel requirements commence. At present, South Africa's bulk petroleum storage infrastructure is relatively limited. Though there has been a recent increase in the construction of bulk petroleum storage facilities (especially at the major ports), the storage facilities are unlikely to store sufficient petroleum products to meet the market's demand.

**HOGAN (EUROPE REGION):** In Azerbaijan and Europe, the potential Trans-Caspian Pipeline (TCP) between Turkmenistan and Azerbaijan to allow the transport of Turkmen gas to Europe via the Southern Gas Corridor may have a significant impact not only on the energy industry but also on regional stability. The TCP would allow Turkmenistan to diversify its gas supply from China and compete for gas to the European market. However, the TCP is strongly opposed by Russia, which might threaten militarization of the Caspian Sea.

**ROTH (CANADA REGION):** Getting oil and gas production to both existing and new markets has proven difficult. The ability of pipeline opponents to stall pipelines in all directions was underestimated. This started with opposition to Keystone XL and had continued to confront all new pipeline proposals to get Canadian oil production to market. Transportation by rail has responded, but it too has limitations that need to be addressed.

## What energy policies and/or political initiatives are changing the playing field for your energy clients?

**VINCE (US REGION):** In the US, the significant (and now years-long) breakdown of energy federalism continues. Congressional gridlock causing a regulatory and policy vacuum that is filled by Executive Branch action, state and local governments, and the judiciary. There has been no coherent federal energy policy for many years. State and local governments have taken a lead, causing a confusing regulatory patchwork that increases the cost of doing business for many companies. There has been heightened use of executive branch instruments to enact policy, but these inevitably are challenged in the courts, leaving the federal judiciary rather than the legislative branch as the ultimate but inapt national policy-maker on key issues.

**ROTH (CANADA REGION):** In Alberta there is a new focus on value added upgrading and possible refining. It will be economically challenging to meet expectations that have been created that could put forecasted increases in production at risk.

**ZOBRIST (US MIDWEST REGION):** There is an increasing conflict between those who propose to construct new infrastructure and others who wish to preserve their property rights. In the area of electric transmission as well as pipelines of all varieties, public officials have stressed the importance of building new infrastructure to support both renewable energy and diversity of energy, but are now being faced with opposition from landowners. Electric transmission lines are essential to bring wind generation from the Great Plains to load centers in other areas of the country. However, some rural landowners who do not want the lines to cross their property, as well as certain environmentalists, are generally opposed to the use of eminent domain to obtain easements to permit the siting of the lines. They are frequently opposing such projects. Their efforts range from intervening in commission proceedings to oppose requests for certificates of convenience and necessity to waging public relations campaigns and opposing elected officials who support the projects. Supporters and opponents come from across the political and social spectrum. Some environmentalists support projects because they benefit renewable energy, while others oppose them because of habitat and aesthetic concerns.

**KAPDI (AFRICA REGION):** Environmental protection and rights have had a significant impact on the energy sector in South Africa. Historically, South Africa had relatively weak enforcement of environmental rights and low prosecution of environmental crimes. During the past 10 years, the legislative framework governing environmental laws has significantly changed and during the past five years the Department of Environmental Affairs (DEA) has increased its investigation and enforcement capabilities. In addition to this, the National Prosecuting Authority is training specialized environmental prosecutors and a number of environmental rights and advocacy groups have been established.

Of particular importance to clients in the energy sector is air quality legislation. The DEA published minimum atmospheric emission standards

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Higher energy prices and resultant increased product prices may also cause Chinese manufacturers to lose their largest competitive advantage—low prices.

in 2010, which had to be complied with by April 1, 2015. A number of energy sector participants, including Eskom and Sasol submitted applications to postpone compliance with these standards.

Part 8 of the National Environmental Management: Waste Act, 2008, is also of particular importance to energy sector participants. Part 8 provides, amongst other things, for the establishment and maintenance of a register of contaminated land, which records details of the owners and users, contamination status, remediation activities and location of all land that is significantly contaminated. Members of the public are likely to be able to obtain access to the register relatively easily. Part 8 also provides the Minister of Environmental Affairs with various powers in respect of the remediation of contaminated land, these include making a remediation order and prohibiting the transfer of land that is subject to a remediation order.

**HOGAN (EUROPE REGION):** In Azerbaijan, the legal regime and sanctity of signed PSAs has remained stable. However, at a time of state budget deficits arising from the low oil price, tax inspections and enforcement are more frequent, thorough and aggressive. A sudden 25 percent devaluation of the local currency on February 21, 2015 has resulted in higher inflation and has put pressures on companies for salary increases. Certain banks have become insolvent, and non-payment of debts has become increasingly frequent, especially among state enterprises.

**BRANDT (APAC REGION):** The Chinese Central Government focuses its energy policies on five areas: demand, production, technology, institutional governance and global markets. Its main policies include transforming the main source of energy from coal, the largest contributor to pollutants and greenhouse gas emissions, to renewable energy. Some smaller coal mines have been shut down, a higher resource tax has been imposed on coal and more renewable energy plants have been built. On the demand side, users are encouraged to reduce their energy consumption and to use energy more efficiently. For example, a tiered pricing scheme has started to be in place in certain parts of the PRC under which some consumers, primarily the urban middle class, pay relatively more for electricity than those in the rural areas.

In response, some of our clients whose businesses relate to renewable energy are performing well and are involved in more commercial transactions. Among them, a hybrid car manufacturer is applying for listing on the Main Board of The Stock Exchange of Hong Kong Limited. We expect more business from them in the future.



What other risks and challenges are keeping energy executives awake at night and how are these particular risks and challenges impacting business activities? What are the key drivers behind transactions or deals in your practice area and region?

**BRANDT (APAC REGION):** Energy security is currently a top priority issue in China. In light of its fast-growing economy and high energy consumption, China has been relying on foreign imports of energy, such as oil and coal, to meet its domestic needs. Some of these are imported from politically unstable regions, for example, the Middle East and Africa. Such dependence on foreign resources exposes Chinese enterprises and the population to fluctuating energy supply and energy prices—and a fast-changing foreign political situation—depriving them of a stable energy supply. Higher energy prices and resultant increased product prices may also cause Chinese manufacturers to lose their largest competitive advantage—low prices. Growth in energy supply has been outpaced by the rising demand for energy, causing occasional power shortages and energy conservation policies being constantly in place, disrupting production and business operations. The Chinese government has in place policies to increase domestic supply of energy in the long run so as to promote energy security; nonetheless, these are long-term policies and Chinese businesses still face energy insecurity in the short run.

**SEARS (TEXAS REGION):** In the US, and especially Texas, a key concern is if commodity prices stay low for an extended period, when do companies have to pivot from the business plans they created in the high price environment? Will the current model work long term with prices in the \$40 range?

**KAPDI (AFRICA REGION):** Last year Parliament passed the Mineral and Petroleum Resources Development Amendment Bill 15B 2013 (the “Bill”). However, at the beginning of this year the President rejected it. The Bill would have been the first major reform of the Mineral and Petroleum Resources Development Act, 2002 (the “Act”), which constituted a fundamental reform of the South African mining and petroleum law. Among the key provisions include a 20 percent state guarantee of free carried interest in all exploration and production operations, and possible entitlement of the state to a further participation interest by (i) an acquisition at an agreed price, or (ii) concluding a production sharing agreement with the relevant petroleum company. The Bill would require that upon acquiring such additional interest, the state and the relevant petroleum company to enter into a joint operating agreement regarding exploration and/or production operations. During his budget speech, the Minister of Mineral Resources indicated that the finalization of the Bill is a top priority for his department, although it is unclear whether the Bill will undergo substantive changes.

**ROTH (CANADA REGION):** Uncertainty regarding the royalty regime in Alberta and the implementation of policies to reduce GHG emissions

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Alberta is proposing to review the royalties it collects from producers at the same time as it is increasing the effective carbon tax it levies against large industrial emitters. When combined with low oil prices, these measures will have an impact on future investment.

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creates investment risk that is being compounded by price volatility. Alberta is proposing to review the royalties it collects from producers at the same time as it is increasing the effective carbon tax it levies against large industrial emitters. When combined with low oil prices, these measures will have an impact on future investment.

**HOGAN (EUROPE REGION):** The low oil price and the consequent reassessment of priority projects, regions and areas of activity are current risks that are troubling executives. These are also the key drivers behind transactions in Europe, Azerbaijan and the vicinity.

**VINCE (US REGION):** In the US, low oil prices will drive many people out of business and new investors into business. Low gas prices have already triggered a titanic shift in energy investment. Energy exports will be interesting on the margin, and there is movement toward allowing oil exports, but this is tempered by domestic concern about potential price increases driven by reduced supply.

**ROTH (CANADA REGION):** In Canada, optimism in the long-term potential of the oil and gas industry will have companies looking for deals that become available. Oil prices should recover as supply is reduced as the result of the significant slowdown that has occurred in upstream oil production. Government policy will also eventually respond to encourage future investment given the relative importance of the oil and gas industry.

What, in your view, will have the most disruptive or game-changing impact on the energy industry in the next year? In the next 10 years?

**ROTH (CANADA REGION):** The market's testing of the resilience of North American shale oil production will create cycles of price volatility for the foreseeable future, which will impact the industry as a whole. If the shale oil resources are as extensive as the shale gas resources, and production costs can be similarly reduced, North American oil prices may not recover.

**SEARS (TEXAS REGION):** Over the next year, an additional price dip in oil and gas prices prior to borrowing base redeterminations would be highly disruptive. Over the next decade, the greatest impact will likely be technology changes that reduce the costs to produce from US basins where rigs are currently being laid down. As the break even cost for certain basins inches down, we may see increased activity even in the face of stagnant global demand.

**HOGAN (EUROPE REGION):** Over the next year, the low price of oil will be the most disruptive force on the energy industry. Over the next 10 years, however, the security of the supply of hydrocarbons will take prominence.





An aerial photograph of a dense urban landscape, likely New York City, viewed from a high angle. The image is heavily filtered with a warm, orange-yellow hue, creating a hazy, atmospheric effect. Numerous skyscrapers and buildings are visible, packed closely together. The text is positioned in the upper right quadrant of the image.

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The Administration's efforts have moved the issue of climate change considerably ahead and, given the challenge, a public focus that will continue to shape US domestic and international efforts for years to come.

# Climate Change— The US Defines A Path Forward

By Jim Rubin, Jeff Fort and Jon Sohn

As President Obama begins the “fourth quarter” of his presidency, he has clearly defined how his Administration intends to move the US forward on addressing the risks and impacts of climate change while creating new opportunities for a low carbon economy. Indeed, through his Climate Action Plan, President Obama has made these issues a major part of his legacy, undertaking a comprehensive program designed to 1) reduce carbon emissions, 2) prepare the United States for the impacts of climate change and 3) lead on international efforts to address climate change.

The President’s actions come in the context of significant economic risks from climate change. As noted in the recent landmark report by the “Risky Business Project” co-chaired by Michael R. Bloomberg, Henry Paulson and Tom Steyer, “[t]he signature effects of human-induced climate change—rising seas, increased damage from storm surge, and frequent extreme heat—all have specific, measurable impacts on our nation’s current assets and ongoing economic activity.”<sup>1</sup>

The ultimate success of the President’s combined efforts will not be known for some time; the

President’s programs face significant political opposition and some efforts to cut emissions will be decided by the courts well after the next elections. But there is no denying that the Administration’s efforts have moved the issue of climate change considerably ahead and, given the challenge, a public focus that will continue to shape US domestic and international efforts for years to come.

## **Fits and starts: The beginning of a comprehensive federal climate program**

Although serious efforts to address climate change began during the Clinton Administration leading up to the international negotiation of the Kyoto Protocol in 1997, there were no attempts to ratify Kyoto in the Senate nor adopt a full domestic regulatory program at the federal level, and such efforts were actively opposed by the Bush administration.

In 2007, however, when the US Supreme Court held in *Massachusetts v EPA*, 549 U.S. 497 (2007), that the Environmental Protection Agency (EPA) had the authority under the Clean Air Act to regulate greenhouse gases (GHGs), the Executive Branch was empowered to take action. In 2008, President Obama was elected along with a short-lived Congressional Democratic majority—both determined to change course on climate change. Initial efforts were

mainly legislative. In 2008, Congress passed a law on mandatory reporting of GHG emissions for multiple sources across industry sectors, a program which continues today to provide key data on annual domestic emissions.

Meanwhile, a comprehensive “cap and trade” bill, which would have established economy-wide GHG limits, a domestic emission credit trading program as well as a national Renewable Electricity Standard passed the House in 2009, only to die in the Senate a year later.

Following an overwhelming Republican takeover of the House in the 2010 midterm elections, the political landscape for climate change was altered dramatically and hopes of climate-related legislation essentially disappeared. Though the Administration had begun work on some regulatory programs before the mid-term elections (e.g. carbon standards and fuel efficiency efforts were first announced in 2009), after 2010, it turned increasingly to the regulatory process and other executive actions to address carbon regulation.

First, EPA acted under the authority of the Clean Air Act, as clarified by the Supreme Court, and made an “endangerment finding” that GHG from new motor vehicles caused or contributed to air pollution that could endanger public health and welfare. This “endangerment finding”

<sup>1</sup> Risky Business, “The Economic Risks of Climate Change in the United States,” <http://riskybusiness.org/reports/national-report/executive-summary> (last visited June 11, 2015).



led directly to GHG tailpipe standards for cars and light trucks in 2010 (extended in 2012), and for medium and heavy duty vehicles in 2011.

Once GHGs were deemed “subject to regulation” under the Clean Air Act for tailpipe standards, EPA took the next step of establishing requirements for major sources of GHG emissions to secure pre-construction permits under the Clean Air Act’s “Prevention of Significant Deterioration” (PSD) and Title V operating permit programs. Through the “Tailoring Rule,” EPA established thresholds for emissions of GHGs above which major sources and sources with major modifications needed to secure PSD permits prior to construction or modification. Among other things, such permits had to apply the “best available control technology” to reduce the GHG emissions. The Tailoring Rule and its preceding regulations were politically and legally challenged, but for the first time, the US was implementing a federal program designed to reduce emissions from the largest sources of GHGs.

Ultimately, the Supreme Court took review of these rules, and in 2014, struck down those portions of the Tailoring Rule which required PSD permits for sources solely based on their GHG emissions. The Supreme Court allowed the EPA to continue the program for sources which emitted threshold quantities of other regulated pollutants as well as GHGs, still a significant number of large sources.

### Obama takes the lead

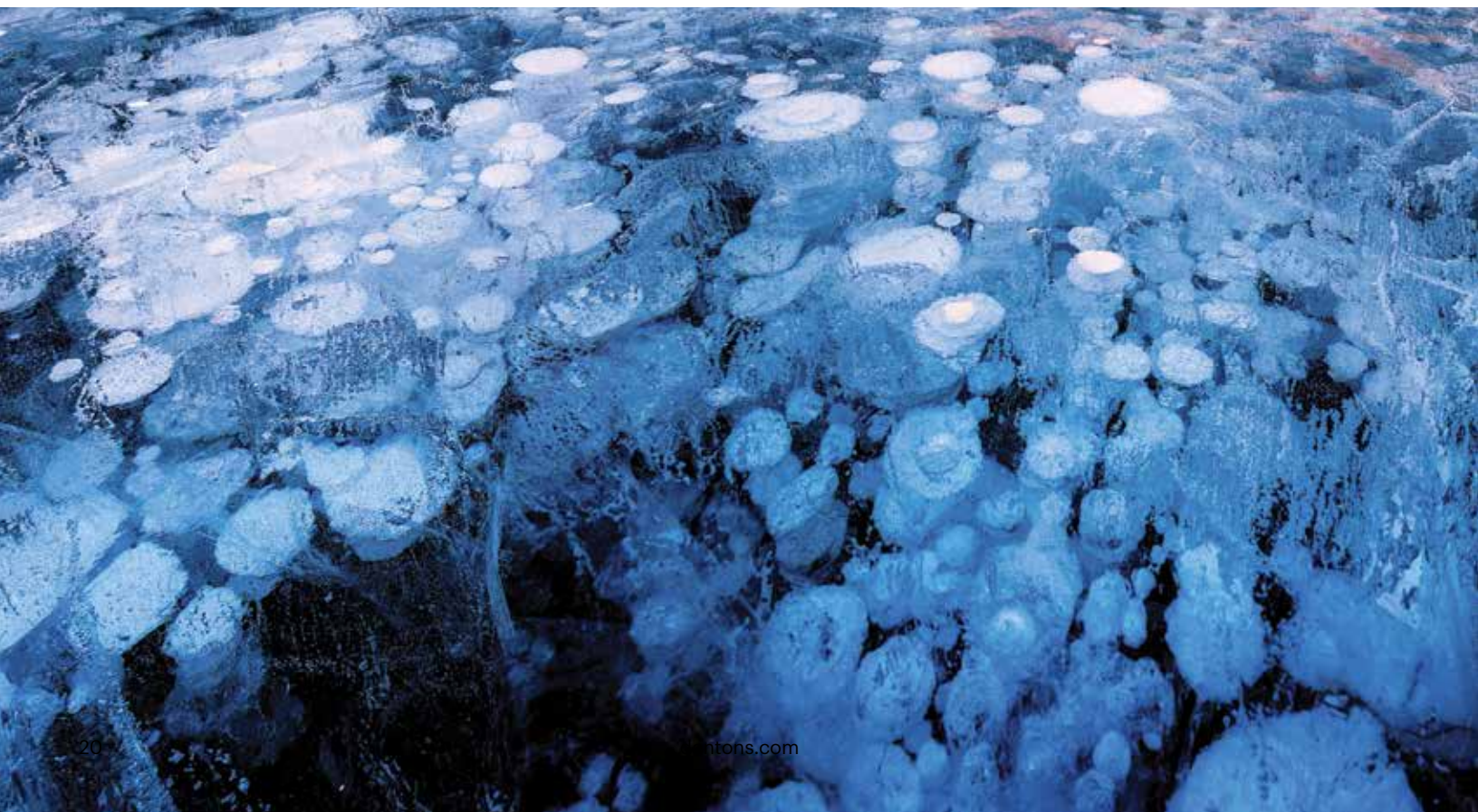
While the Tailoring Rule was a significant step, EPA portrayed it as an inevitable, indeed automatic progression from the tailpipe standards, which were themselves derived from *Massachusetts v. EPA*. Certainly the EPA had pushed ahead on discrete areas which supported carbon reductions such as implementing the Clean Air Act’s reformulated fuels standard (RFS) and permitting underground injection of carbon to make way for carbon capture and sequestration (CCS) technologies. But neither the Obama administration nor EPA had yet articulated a forward-looking program to seek broad carbon

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## The federal picture evolved further after President Obama’s re-election in 2012.

reductions and mitigate climate impacts across multiple sectors. Rather, leadership came from California and several other states in the Northwest and Northeast which began to develop carbon-reduction laws and programs on their own.

The federal picture evolved further after President Obama’s re-election in 2012. The President began to highlight climate change regularly in his major speeches, including at his second inauguration, a State of the Union address and the United Nation’s first climate summit. Climate change was a prominent part of the National Security Strategy, and the President brought on senior advisors intent on making climate action a major policy initiative, staying “on offense” in the “fourth quarter” of his presidency.



In June 2013, the President announced his Climate Action Plan (Plan), in which the US would reduce emissions, prepare for climate impacts and lead the private sector and the world in responsive and preparatory actions that will address risks and create new opportunities. The Plan would include new efficiency standards for appliances and federal buildings, new fuel economy standards, further support of a RFS and actions to reduce emissions of methane and other potent GHGs. It would also include executive agency actions to increase permitting and deployment of renewable technologies and funding for advanced fossil energy and efficiency, including CCS. But the crowning jewel of the Plan would be GHG performance standards for new and existing power plants under the Clean Air Act, designed to significantly reduce emissions from a sector which produces nearly a third of all domestic GHG emissions. In his Plan, the President took the unusual and noteworthy step of mandating specific deadlines for EPA to issue these performance standards.



## Regulatory actions

### Power plants

To regulate carbon from power plants, EPA turned to a section of the Clean Air Act authorizing it to set “new source performance standards” (NSPS) for specific sectors based on the “best system of emission reduction” (BSER) from “adequately demonstrated” technology. Under one provision, known as section 111(b),<sup>2</sup> EPA set NSPS for new power plants and for modified and reconstructed power plants. The draft rule for new power plants separated natural gas from coal and pet coke plants. As to the former, it set BSER at the emission standard of the most efficient combined cycle natural gas plants. As to the latter, it proposed a strict standard that assumed effective use of “partial” CCS technology. The rule was published in January 2014 but has not yet been finalized. A new unit is one constructed after the publication date of the rule.

Six months later, in June 2014, EPA proposed NSPS for modified and reconstructed units under 111(b) and NSPS for *existing* power plants under section 111(d). Entitled the “Clean Power Plan” (CPP), the proposal for carbon reductions from the US’s existing power fleet is the most ambitious EPA program to date regarding carbon reductions. Rather than setting limits at individual plants or an overall mass limit per state, EPA proposed carbon emission rate targets for each state to achieve by 2030, with interim standards to be met on an averaging basis between 2020 and 2029. EPA estimated that collectively these targets would reduce carbon emissions 30 percent by 2030, based on 2005 emissions.

EPA calculated the targets by reviewing each state’s total power generation in 2012 and determining

how much it could reasonably limit its electric power-based emissions through a combination of plant efficiencies, re-dispatch of existing gas-fired generation, renewable and nuclear generation and demand-side efficiencies. Each state is empowered to develop a plan to meet its targets in a flexible manner so long as the State Implementation Plans (SIP) meet EPA criteria and are federally enforceable. SIPs will however primarily be based on the following four “building blocks” identified by EPA:

1. Make fossil fuel power plants more efficient.
2. Use low-emitting natural gas combined cycle plants more where excess capacity is available.
3. Use more zero- and low-emitting power sources such as renewables and nuclear.
4. Reduce electricity demand by using electricity more efficiently.

States can file their own plans or be part of regional plans, and can convert their emission rate targets to mass-based targets to facilitate trading. To the extent a state refuses to submit a SIP or the submission is considered inadequate by the Agency, the EPA is developing a mandatory Federal Implementation Plan. The scope of the Clean Power Plan is as broad as EPA’s ambition—rather than just focusing on existing power plant emissions, EPA envisions a grid-wide effort to set states on a path toward a more efficient, lower carbon pathway through flexible, cost-effective strategies.

It is significant to note here that the “shale revolution” in the US, namely the relatively recent development of abundant low-priced natural

<sup>2</sup> 42 U.S.C. § 7411(b).



gas largely arising from hydraulic fracturing of shale and other unconventional sources, lies at the heart of the CPP and the new unit rule. As will be described in more detail below, the shale revolution has made it possible for EPA to plan in its rules for large-scale replacement of coal-fired generation with new gas plants or increased use of existing plants.

EPA plans to release final versions of the rules as a package in August 2015, and they will be immediately challenged in court. Indeed, both the proposed new unit rule and the Clean Power Plan have met with extraordinary opposition, generating both lawsuits and Congressional efforts to scuttle the proposals. Given the degree of planning necessary for compliance, many states are already working on how they might meet the proposed targets individually or regionally, even if some intend to challenge the rule when final. The Administration will seek to stay on course to have SIPs submitted to the EPA before the President's term ends, though the EPA review process will inevitably extend beyond 2016.

### Methane

EPA is also considering regulating methane emissions resulting from the explosive growth in natural gas drilling, production and transportation. In 2012, EPA set regulations on hydraulic fracturing of natural gas wells designed to capture any volatile organic compounds and methane leaking during well completion. In January 2015, the White House announced a series of new initiatives designed to reduce methane emissions between 40-45 percent below 2012 levels by 2025. This strategy includes NSPS for new and modified oil and natural gas production sources, and natural gas processing and

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## It is significant to note here that the "shale revolution" in the US lies at the heart of the CPP and the new unit rule.

transmission sources for methane to be completed in 2016. Rules would likely include regulating hydraulic fracturing of oil wells, as well as from methane emissions from gathering, boosting, compressing, storing and transporting natural gas. In contrast, the White House proposed to handle *existing* sources of methane releases through voluntary or non-regulatory actions, but leaves the door open for future regulation. More specific Administration action is anticipated in the coming months.

Since methane is an extremely potent GHG, reduction of leaks or emissions could significantly reduce overall sector and national GHG emissions. Industry, however, has challenged just how much methane is being released and questioned the need for further regulation. Several competing scientific studies on the topic have emerged that provide no consensus on the matter. Hence, any new regulatory programs in this area are bound to be challenged.

### Hydrofluorocarbons

EPA has also proposed to reduce the hydrofluorocarbons (HFCs) authorized to be used in a wide variety of industrial applications. The use of HFCs, which have high global warming potential (GWP) (in the range of 100s of times to 1000s of times more potent than carbon dioxide) has increased over the last twenty years as the Montreal Protocol rules have limited the use

of ozone depleting substances with an even higher GWP. EPA is proposing to further restrict the use of HFCs by banning the use of the HFCs with relatively higher GWPs under the authority of Title VI of the Clean Air Act.

Beyond these initiatives, there are a number of additional sectors that will be or could be subject to climate regulation in the near or longer term. These include new tailpipe standards for medium and heavy duty engines and trucks, emissions standards for aircraft and emission standards for refineries, oil and gas production and cement manufacturing. Some of these will result in proposals prior to the change of administration, while others will await future administrations.

### Non-regulatory actions

In addition to regulatory actions, the Obama Administration has issued an ever increasing number of executive orders, memoranda, reports and voluntary agreements to lead the country by example, incentivize private efforts to reduce GHG emissions, and help the nation prepare for and adapt to impacts from climate change. For example, in July 2014, the President announced a series of programs aimed at improving the government's response to climate change as part of his focus on replacing aging infrastructure, and his Council of Economic Advisors released a report finding that delaying policy actions by a decade increases total mitigation costs by approximately 40 percent, and failing to take any action would risk substantial economic damage to the country.

In September 2014, the President issued an executive order directing all federal agencies to factor climate change resilience in







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## These efforts add up and demonstrate how the Administration is taking a comprehensive approach to climate change, using all tools within its authority and viewing much of its policy through a climate change lens.

their international development programs and investments by evaluating climate-based risks and vulnerabilities in their strategies, plans and programs. Also that month, the White House announced a joint program with producers of HFCs to reduce their use and seek alternatives, a measure which complements the EPA proposal to ban certain HFCs. By executive order, federal agencies were ordered to reduce use of HFCs as well.

In October 2014, the White House released the Climate and Natural Resources Priority Agenda, a plan to protect federal lands and forests from climate change impacts. In December 2014, the President's Council on Environmental Quality issued revised draft guidance on how federal agencies should take significant GHG emissions and climate change into account in their reviews of environmental impacts of major federal actions and decisions under the National Environmental Policy Act. In January 2015, the President issued another executive order requiring federal agencies to account for sea level rise and storm intensity when making grants and building or repairing infrastructure. In March 2015, the President issued an executive order committing federal agencies to cut their GHG emissions 40 percent from 2008 levels through improved efficiency in federal buildings and fleets, and increased use of renewable energy.

The White House also released a draft report linking climate impacts to health problems.

Most recently, on June 16, 2015, the White House hosted a summit to encourage investment in clean energy and new technologies to address climate change at which it announced \$4 billion in private company commitments to support this investment as well as its own efforts to facilitate such development by sharing information from Department of Energy laboratories.

While none of these efforts may appear as noteworthy—or legally binding—as the EPA regulatory proposals described above, they do add up and demonstrate how the Administration is taking a comprehensive approach to climate change, using all tools within its authority and viewing much of its policy through a climate change lens.

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## The availability of cheap natural gas at a low price has transformed the US economy, and the power sector in particular.

### Riding economic tailwinds

Perhaps the most important development in climate change policy over the last decade has not been legal or regulatory, but rather economic—the relatively new abundance of cheap natural gas made possible by the “shale revolution” discussed above, where new like hydraulic fracturing and horizontal drilling technologies, have been employed to economically recover gas from shale and other tight formations.

The availability of this gas at a low price has transformed the US economy, and the power sector in particular. Suddenly, low priced natural gas with a lower GHG emissions footprint can compete with and supersede coal as a fuel source, especially as EPA regulatory programs outside the climate arena have increased the costs of coal-fired generation. Most newly constructed power plants are natural gas-fired, and few new coal plants have come on line.

EPA has taken full advantage of this new economic situation, proposing regulations which both presume a reduced coal-fired fleet and at the same time increase pressure to further reduce use of older coal-fired plants. Hence, EPA selected a CCS-based standard for new coal plants, based on estimates that few if any new coal plants were to be built in the US in the next decade, and that any such plants would have CCS installed even without the rule. Similarly, EPA assumed in the Clean Power Plan that re-dispatch of natural gas plants would allow many states to shut down or reduce the load of their coal plants to meet their targets.

At the same time, these rules would reinforce the economic effects of the market by favoring cheaper

and cleaner natural gas over coal. EPA would not force coal out of the picture, but it would be increasingly costly to use coal without the cleanest and most efficient technologies.

Of course there are downsides to reliance on natural gas, given that such use can lead to significant emissions of methane, as described above, forcing EPA to impose regulations which could potentially increase the cost of natural gas production. EPA's answer is to use the Clean Power Plan to incentivize a greater growth in renewables. Natural gas might be the answer to cleaner generation in the short term, but EPA sees renewable power as increasingly competitive with fossil fuels and a growing choice for the nation's power production. In the end, EPA considers its regulatory proposals as merely heading in the same direction that generators, states and grid regulators are already taking toward a cleaner and more efficient generation mix, with renewable energy providing an ever-increasing role. EPA would just be providing a boost to this new development.

### Facing political and judicial headwinds

It is one thing for the Obama Administration to articulate a national climate change policy, but it is far more difficult to finalize and implement it effectively and over the long term. The President's Climate Change Action Plan has generated criticism at every step. A now Republican-majority Congress has been hostile to any executive agency actions to address climate change, and is constantly seeking ways to counter what critics of the President consider an end-around legislative authority. Senate majority leader Mitch McConnell (R-KY) has even called on states to "just say

no" to the Clean Power Plan and refuse to engage. Others decry the Administration's alleged war on coal, and warn of higher priced and less reliable energy in the future.

Perhaps the greatest threat to the President's climate change agenda and legacy lies with the federal courts. Every final rule, and even some proposed rules, will be or have been challenged, and EPA faces some real risks as it seeks to push the envelope of its authority under the Clean Air Act. Since *Massachusetts v. EPA*, the Supreme Court has heard two more climate change-related cases, and it is perhaps inevitable that it will one day consider challenges to the new unit rule and Clean Power Plan. In view of recent rulings, it is conceivable that the conservative majority now on the Court will view EPA's climate change rules with a highly critical eye, especially a program as broad in scope as the Clean Power Plan.

The Administration and EPA are well aware of these risks and are laboring mightily to release the final rules in time to allow the Administration to defend them, while addressing some of the most obvious legal vulnerabilities in the proposals. But ultimately, the success of these rules

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## Some key aspects of President Obama's climate legacy may be at the mercy of both the courts and the next administration.

will not finally be decided until well after 2016. Thus, some key aspects of President Obama's climate legacy may be at the mercy of both the courts and the next administration.

### International engagement

The potential legal and political vulnerabilities of the President's domestic climate change agenda, as described above, temper the President's significant efforts to work with the global community on climate change. The Climate Action Plan provides substance to the Administration's pledge to reduce its GHG emissions and has put the US back in a leadership role at the United Nations Framework Convention on Climate Change (UNFCCC) negotiations. Indeed, the recent US pledge to the UNFCCC to reduce GHG emissions by 26–28 percent from 2005 levels by 2025 necessarily assumes significant reductions from the Clean Power Plan, potential methane regulations and other regulatory programs that are in effect.

Nonetheless, the US has leveraged its new international leadership status to push other countries and businesses to act, most notably reaching an historic agreement with China whereby President Obama announced the target to cut net greenhouse gas emissions noted above. At the same time, President Xi Jinping of China announced targets to peak CO<sub>2</sub> emissions by 2030 or earlier, and to increase the non-fossil fuel share of all Chinese energy to 20 percent by 2030. As part of the agreement the US and China agreed to work together towards "a legal instrument or an agreed outcome with legal force" at the United Nations Climate Conference in Paris in 2015. This high level commitment has injected new life and momentum into the climate negotiations.





## Paris and beyond

The 21<sup>st</sup> Conference of the Parties (COP) to the UNFCCC will be held in Paris in early December. The emerging agreement reflects a new model of international climate governance blending a more “bottom-up” approach of national ambition setting but placing those domestic approaches within an international framework for reviewing adherence to these submitted goals.

Unlike the Kyoto Protocol, which was a formal treaty and which created binding emission reduction obligations on developed countries but none on developing countries, the Paris COP seeks to have every member country (195 countries) adopt and submit its own “Intended Nationally Determined Contribution” (INDC) to keep the global climate temperature less than 2C above 1990 levels. That objective is expected to require an 80 percent reduction in global emissions by 2050.

These INDCs are to include mitigation measures (steps to reduce GHG emissions from all sectors) and may include measures to adapt to climate change, such as measures with respect to rising sea levels, increased droughts and increased severe weather events. Technological innovation and capacity building are other aspects which may be included in an INDC. The US has submitted its INDC which generally tracks the President’s Climate Action Plan. The EU has proposed 40 percent reductions in GHG emissions by 2030. It is anticipated that over 50 percent of global GHG emissions will be covered by INDCs in the lead up to Paris. The World Resources Institute’s CAIT Climate Data Explorer is an excellent tool to track all countries’ “Paris Contributions.”<sup>3</sup>

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3 World Resources Institute, CAIT Climate Data Explorer, <http://cait.wri.org>.



In the context of encouraging participation by developing countries in an agreement and the adoption of INDCs, the Green Climate Fund (GCF) was established with the purpose of making a significant and ambitious contribution to the global efforts towards attaining the goals set by the international community to combat climate change. The GCF headquarters is located in Songdo, Republic of Korea. It has a 24 member board, equally representing developed and developing countries and an allocation framework divided evenly between transformational mitigation and adaptation projects. The GCF includes a Private Sector Facility to leverage necessary participation of private capital and projects into climate finance goals, which is consistent with US domestic efforts promoting private investment.

The structure of the proposed Paris agreement and INDCs is linked to the GCF being adequately funded. Over \$10 billion has been pledged to the GCF to date, including \$3 billion from the US. However, the US pledge has been challenged in the Congressional appropriations process, which is the Administration's favored means to address the US financial commitment. The outcome of the US pledge remains to be seen although it is expected that at least a first tranche of the US pledge can be accomplished through discretionary budgets of the US State Department prior to the Paris meetings.

Many believe that the Paris COP, for all of the efforts which many countries will make, will not be as definitive as the Kyoto Protocol, which set clear targets and a timetable for implementation. At the same time, the Kyoto "top down" approach resulted in the US, China, India and other key emitters not participating. The best-case

## It is highly likely the 2C target as recently endorsed by the 2015 G7 Summit will remain as the focal point for climate regulatory and financial measures.

scenario may be that the COP agrees to a deal where all countries will over time reduce emissions within a 2-degree target. Such an agreement will need to articulate clear policy and investment signals inducing action by lawmakers, key industrial sectors and private investors. For example, in June several large European oil and gas companies sent a letter to Christiana Figueres, the top UN climate official, announcing that they are advocating that the Paris Agreement includes a call for carbon pricing, where national approaches are complimented by internationally connected emissions-trading systems.

A Paris agreement will also need to provide clarity regarding each country's GHG emissions-reduction plan, with a view to building international trust and cooperation on implementation and reporting requirements. Likewise full recognition of countries that are vulnerable and need financial support to address climate change must be explicit for a feasible agreement. Whatever the result, it seems it is highly likely the 2C target as recently endorsed by the 2015 G7 Summit, will remain as the focal point for climate regulatory and financial measures with an expectation that mitigation measures on the order of 80 percent reductions from 1990 levels are needed.

A challenge remains however for any international agreement to get political support from a Republican-controlled Congress. So the legal form of any obligations

the agreement takes in Paris will require careful navigation to have ultimate US support. It is doubtful for instance, if a Paris Agreement takes the form of a Treaty requiring ratification from two-thirds of the Senate or legally-binding targets, that it will get that support in the near-term. So other legal options that require less or no Congressional vote and approval may be under deliberation by the Obama Administration.

While President Obama seeks a legacy as a leader in these global efforts, it remains to be seen whether the US will emerge in this role or be perceived to be a laggard.

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# US Crude Oil Exports: Can The Ban Survive The Boom?

By Jeff Lane

Perhaps no policy debate underscores more vividly the changing energy landscape in the US than federal lawmakers' re-examination of the nation's decades-long statutory ban on crude oil exports.

The US crude oil export prohibition dates back to the 1970s. The 1973 Arab oil embargo caused a steep increase in crude oil prices and highlighted the United States' reliance on crude oil imports. US producers had also reacted to domestic price controls for crude oil, in place at the time to export and sell their oil in the unregulated world market. In response to these developments, in 1975 Congress passed the Energy Policy and Conservation Act with a restriction on US crude oil exports, subject to the President's discretionary authority to make exceptions deemed to be in the national interest.

President Reagan determined in 1985 that the export of crude oil to Canada for internal consumption was in the national interest, and other exceptions have been established over time, including exports from Alaska's Cook Inlet and exports of a limited annual volume of heavy California crude oil. But US crude oil exports have remained quite limited. According to the Energy Information Administration (EIA), an independent analytical arm of the US Department of Energy, crude oil exports in 2014 averaged just over 126,000 barrels a day (b/d), almost all of which was sent to Canada.





For much of these roughly four decades, the US crude oil export ban had been relatively non-controversial, with US crude oil production in steady decline as domestic demand increased. After peaking at 11.3 million b/d in 1970, US production fell to 6.8 million b/d in 2006. US demand for oil grew by 6 million b/d over that same period, making the nation increasingly dependent on imported oil to meet its energy needs.

Since 2008, this trend has been dramatically reversed. US oil production grew to 9.5 million b/d by March of 2015, with substantial gains in just the last three years. During this same time, production of natural gas liquids (e.g., propane, ethane, etc.) from shale and other natural gas wells has doubled from 1.7 million b/d to 3.2 million b/d, for a total of 12.7 million b/d. Meanwhile, US demand for oil has decreased nearly 1.8 million b/d.

This trend of increasing production and dwindling demand might have been motivation enough to reassess the crude oil export ban. But it is the type of oil being produced in the US that has given particular momentum to the debate. Most of the recent and anticipated growth in US oil production is of “tight oil,” which in the US is generally of the light/sweet (low sulfur) variety, referred to as LTO or “light tight oil.” This crude output is of a lighter weight and lower sulfur content than the “heavier” and “sour” Canadian, Mexican, Venezuelan and Middle Eastern crudes that most US refineries are configured to process, creating a mismatch between the growing US crude supply and current US refining capacity. This mismatch has impacted the debate about the ban on exports. Domestic oil producers express concern that without the ability to export to foreign markets,

they will have to discount their oil to incentivize refiners either to process it at existing facilities or build new refineries. Refiners, meanwhile, argue that allowing crude oil exports will raise domestic crude prices and harm their competitiveness.

As the political debate over allowing crude oil exports intensifies, the agency responsible for issuing crude oil export licenses—the Bureau of Industry and Security (BIS) within the Department of Commerce—made an important ruling late last year that affects the scope of the current ban. BIS generally defines “crude oil” subject to the ban as having “not been processed through a crude oil distillation tower.” However, it recently classified condensate (a very light hydrocarbon liquid) that has been both stabilized and processed through a field distillation tower as a refined oil product (i.e., a “petroleum product”) that may be exported. This distinction is important because stabilization and field distillation towers are much less expensive than crude oil distillation towers at refineries.

But opponents of the crude oil export ban have higher ambitions than incrementally expanding the list of refined products. Prominent Republican members of the House and Senate, and a few Democrats, have argued the ban ignores the realities of today’s energy landscape and that lifting it would further increase domestic oil production, create jobs and help grow the economy.

Increasingly, opponents of the ban also point to the geopolitical advantages of exploiting the United States’ newfound energy abundance in world markets. Attention to the issue of the US ban on crude oil exports intensified in light of the debate over lifting sanctions on Iran

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## It is the type of oil being produced in the US that has given particular momentum to the debate.

as part of the tentative international agreement to limit Iran’s nuclear program. At a recent Senate Energy and Natural Resources Committee hearing, Committee chair Senator Lisa Murkowski (R-Alaska) remarked that “Iran will be able to make money off selling oil” while American companies remain unable to export. “It would be helpful, here in this country, if we were willing to lead from the front on this and lift our own outdated sanctions,” she said.

After spending many months arguing that the Obama Administration should exercise its discretion to allow additional crude oil exports, including granting an exemption for exports to Mexico, Senator Murkowski recently introduced legislation with Senator Heidi Heitkamp (D-ND) to repeal the statutory ban. The bill also directs the Department of Energy to develop a standard definition of condensate. Similar legislation had previously been introduced in the House of Representatives.

Sens. Murkowski and Heitkamp introduced a separate but complementary bill that would give the President the authority to impose restrictions on exports for up to one year under certain special circumstances such as national security threats, national emergencies, sustained crude oil shortages, and when supply shortages or price increases are likely to negatively impact

employment. It is revealing that even these strong supporters of lifting the ban on crude oil exports decided to include these several conditions that would allow it to be re-imposed. The final condition—a trigger tied to an increase in gasoline prices—lies at the heart of lawmakers' caution in approaching this issue. While taking any action that may increase prices for consumers at the gas pump may not be the third rail of American politics, it ranks with proposals to raise taxes or cut Social Security or Medicare in its ability to enrage voters. This is one reason that neither the House nor the Senate Republican leadership currently plans to include legislation to lift the ban in comprehensive energy legislation their energy committees are developing.

Is this caution justified? Jason Bordoff, former Special Assistant to President Obama and Senior Director for Energy and Climate Change on the White House National Security Council, considered various studies on the topic and estimated in a paper he co-authored last year for Columbia University that lifting the ban on crude oil exports would increase US oil production as much as 1.2 million b/d between now and 2025 and actually reduce domestic gasoline prices up to 12 cents per gallon. And the EIA concluded in a study released in October 2014 that "[t]he effect of the relaxation of current limitations on US crude oil

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While taking any action that may increase prices for consumers at the gas pump may not be the third rail of American politics, it ranks with proposals to raise taxes or cut Social Security or Medicare in its ability to enrage voters.

exports would have on US gasoline prices would likely depend on its effect on international crude oil prices, such as Brent, rather than its effect on domestic crude prices."

Senator Murkowski and others seized on the EIA study to argue that exporting crude oil will not raise domestic gas prices and by increasing global supplies of crude those US exports should, in fact, help drive gas prices down. Refiners and most Democratic members of Congress continue to raise the prospect of higher gas prices in arguing to maintain the ban, pointing to other studies that support their view. Environmental groups and many of those same Democrats also resist lifting the prohibition because it will encourage more oil and gas production at a time of growing concern over greenhouse gas emissions and climate change.

The remarkable shifts in crude oil production and demand in the United States have occurred at

a rapid pace. The nation's new supplies of light/sweet crude oil have highlighted the limitations of US refining capacity designed for heavier international crudes. Legislative and regulatory bodies are beginning to react, but they tend to move slowly, particularly when political "hot button" issues such as gasoline prices and environmental concerns are implicated. But gas prices have moderated in recent months, and international considerations have grown more prominent in the debate. Lawmakers have been emboldened to question a policy that was created under very different circumstances, and they will be sure to put many long-held assumptions to the test in the coming months.


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The image features a series of high-voltage power transmission towers, also known as pylons, silhouetted against a vibrant sunset sky. The towers are constructed from a complex lattice of steel beams. Multiple high-voltage power lines stretch across the frame, connecting the towers. The sky transitions from a deep orange near the horizon to a lighter, hazy pink at the top. The overall composition conveys a sense of industrial infrastructure within a natural, serene environment.

Utilities are  
enjoying a return to  
relevance.

# Utilities Find Opportunities to Expand Services to Customers as States Pursue Green Policies

By John Leslie

Utilities want their customers back. After suffering through three decades of federal and state policies limiting the utilities' role in competitive energy markets, utilities are finding ways to reconnect with customers by taking advantage of government policies designed to increase renewable energy procurement and reduce greenhouse gas emissions. These "green" government policies encourage—and in some cases require—gas and electric utilities to offer new (and often unregulated) services to their distribution service customers. Skeptical of the competitive market's ability to achieve green energy goals, state regulators are turning to the utilities to carry out policies intended to reduce emissions. Utilities are enjoying a return to relevance.

## Regulatory policies designed to open energy markets to competition

In the mid-1980s, state and federal regulators provided large industrial gas users the opportunity to switch from "bundled" utility gas sales service to direct purchases of supplies from producers and marketers. Since this initial opening of the retail gas procurement market, utilities have witnessed the departure of gas and electric customers in favor of competitive service alternatives.

State and federal rules were also developed in the late 1980s and 1990s to limit the utilities' role in non-traditional energy service activities. State regulatory commissions adopted "affiliate transaction rules" that prevent utilities from using the power of incumbency to offer new products and services to existing customers, except through unregulated affiliates. These rules require utilities and their affiliates to maintain separation, so that utility ratepayers do not contribute to the cost of competitive alternatives that may be offered by affiliates. Through the implementation of these rules, the utility's role has been limited to providing "default" procurement service to those customers that do not otherwise select a competitive procurement option.

For example, gas and electric utilities have been precluded, in some states, from offering alternative pricing options or alternative portfolio choices to customers that purchase their gas and/or power supplies from the utility. State regulators have reasoned that if a customer wishes to purchase its gas or power at a price that differs from the utility's average portfolio price, or at a fixed price, the customer should purchase its gas or power from a third party supplier. Rather than allow the utility the opportunity

to offer multiple portfolio options (with the potential for shifting costs between procurement customers), state regulators decided to rely on the marketplace to offer customers creative, competitive commodity service alternatives.

In addition to purchasing their gas and power from third parties, end-use customers now purchase a variety of energy-related services, including demand response, energy efficiency and on-site electric generation, from non-utility providers. These competitive opportunities can reduce overall utility revenue and reduce customer demand for gas and power, thus deferring (or eliminating) the need for utility system expansion. Customers' pursuit of competitive alternatives also erodes the utility/customer relationship, as energy users turn to third parties to assist in the development of energy strategies. Increasingly, utilities have been viewed by energy consumers as barriers to competition instead of facilitators of energy solutions.

Utilities generally do not earn a profit on the sale of gas or power, so the loss of "procurement" revenue does not significantly affect utility earnings. However, the loss of gas or power sales to third party suppliers reduces overall utility revenues,



and leads to customers developing closer relationships with third party energy marketers, who can and do offer energy strategies that may differ from the strategies that otherwise would be promoted by utilities. Third party energy marketers have often supplanted the utilities as the entities with the closest direct energy relationship to the customer. Energy marketers may recommend behind-the-meter generation, microgrids or other “bypass” options that can reduce a customer’s energy usage and contribute to a slowing—or even a reduction—in overall customer demand on the utility’s system. Reduced customer demand means reduced capital spending by utilities on pipeline and transmission expansions. Reduced capital spending means a stagnating rate base and flat earnings. Opening the gas and electric markets to competition has had the effect of limiting the utility’s role to that of a “pipes and wires” provider.

### Statewide green initiatives provide an opportunity for utilities to re-engage in energy markets

Not willing to accept a diminished role in energy markets, utilities have found a way to counter customer bypass of utility service. Supported by state regulatory policies that encourage (or mandate) increased investment in renewable energy, low emission vehicles, energy efficiency and demand response, utilities have plunged headlong into these new markets. In some instances, utilities have expanded their services with shareholder dollars, on an unregulated basis. In other cases, utilities have entered competitive markets with ratepayer subsidies. Either way, utilities increasingly seek to build on their existing relationship with customers by promoting new utility-provided services that compete with services provided by third parties.

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## Utilities have found a way to counter customer bypass of utility service.

In a number of states, legislators and regulators have approved voluntary renewable energy procurement programs. Through these programs, a customer that purchases its electric power from the utility may increase the percentage of renewable energy in its supply portfolio by paying a premium above the utility’s otherwise applicable (default) procurement price. Although third party suppliers have the ability to sell up to 100 percent renewable energy to their “direct access” customers, some states have determined that customers that choose to purchase their power from the utility (or customers that, for any reason, are not eligible to purchase their supplies from a third party supplier) should have the ability to enhance the percentage of renewable energy in the energy portfolio supplied by the utility.

As noted above, states previously determined that customers seeking energy procurement alternatives must look to third party suppliers. Today, state policies that encourage increased renewable energy procurement have led state commissions to allow the utilities to add voluntary renewable procurement options to the “default” procurement option that otherwise is available to customers purchasing power supplies from the utilities. Voluntary renewable procurement programs raise competitive issues regarding ratepayer subsidies and the treatment of stranded costs associated with the inability to precisely match increased utility renewable procurement with the level of customer subscription to the voluntary renewable program. Nevertheless, many states have

allowed utilities to offer this new procurement product owing to the “public benefit” associated with increased renewable energy procurement.

In California, utilities have also proposed to offer, with or without a legislative or regulatory mandate, to provide new energy-related products and services that historically have been provided exclusively by third parties on an unregulated basis. In applications seeking authority to offer these new products and services, the utilities claim that it is necessary for the utilities to enter these markets to stimulate demand and increase competition for services that contribute to a reduction in greenhouse gas emissions.

For example, Southern California Gas Company (SoCalGas) filed an application in August 2014 seeking authority to provide existing customers with distributed energy resources (DER), including CHP resources, fuel cells, waste-to-heat power and other advanced energy systems. Responding to the governor’s stated objective to increase the penetration of distributed generation in the state, SoCalGas proposes to enter a market that heretofore has developed exclusively on an unregulated basis. SoCalGas proposes to “build on its existing customer relationships” to offer DER services to its existing customers.

SoCalGas proposes to offer DER services to customers at a negotiated price, on an unregulated basis, exclusively with shareholder funding. SoCalGas seeks to leverage its position as

the customer's "trusted energy advisor" to offer a service that can be—and is currently—offered by unregulated third parties. SoCalGas takes the position that the utility's entry into the DER market is appropriate to increase behind-the-meter generation, thus reducing customers' electricity demand, reducing stress on the electric distribution system, and reducing the need for new utility scale fossil-fired generation. At the same time, SoCalGas hopes to expand customers' use of natural gas and increase throughput on its gas transmission and distribution system.

SoCalGas' application, and similar applications seeking authority to provide behind-the-meter gas compression services as well as upstream biogas processing services, raise questions about the impact of utility participation in competitive energy markets. These applications seem to contradict the purpose of the affiliate transaction rules, and also raise questions about whether these unregulated utility services truly can be provided without subsidies from utility ratepayers.

Two new services for which California's electric utilities seek ratepayer support are supply-side demand response and electric vehicle charging programs. The State's electric utilities have proposed to offer supply-side demand response programs through which customers agree to reduce or curtail electric usage during specified hours, in exchange for a payment determined by the California PUC or by the CAISO. The utilities finance these programs with ratepayer dollars, with no risk to shareholders. Demand response can be "aggregated" by the utilities, or by third parties that sell demand response into competitive markets.

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## Questions have been raised whether the utilities should be allowed to use ratepayer dollars to compete with third parties to sell aggregated supply-side demand response into wholesale markets.

Unlike the utilities, however, third party aggregators bear the risk associated with the payments made to participating customers. Questions have been raised whether the utilities should be allowed to use ratepayer dollars to compete with third parties to sell aggregated supply-side demand response into wholesale markets.

Two of the state's electric utilities also have proposed to use ratepayer dollars to install and operate electric vehicle charging stations at business, government and multi-family housing sites throughout the utilities' service territories. These proposals also raise questions about whether the utilities' role should extend beyond the traditional "pipes and wires" business. Electric vehicle charging stations have been installed by non-utility third parties throughout the nation. The electric utilities' proposals in California (which if approved would be funded by ratepayers) call into question whether a competitive market for electric vehicle charging can develop in the state. Third party providers of electric vehicle charging facilities (who bear the costs and risks associated with

installation and operation of these facilities) will have difficulty competing with a massive utility program that is financed by utility ratepayers.

The utilities assert that unless the utilities are permitted to launch large-scale programs to install, own and operate electric vehicle charging stations, the governor's goal of 1.5 million zero emission vehicles on the road by 2025 cannot be achieved. Opponents assert, however, that if the utilities' proposals are adopted, the utilities will dominate the electric vehicle charging market and crush any opportunity for a competitive market. As one utility representative remarked, the Commission must choose between fostering a competitive market and achieving a large scale EV charging program in a short period of time.

## Conclusion

Utilities are fighting to win back their customers. Not content with a diminished role in energy markets, utilities are capitalizing on state policies supporting increased renewable energy procurement and reduced greenhouse gas emissions. As legislators and regulators pursue these environmental objectives, they must consider whether these objectives can and should be met through competitive incentives, or whether the utilities are the most expeditious path to achieving these goals.

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A photograph of a server room with rows of server racks. The room is dimly lit with a strong blue/purple hue. The racks are filled with server units, and the floor is a light-colored tile. The ceiling has exposed pipes and lighting fixtures.

Doing differently is the key to  
achieving transformative cost  
savings.

# Harnessing the Big Bang: Reimagining Smart Grids

By Todd Daubert

We are on the brink of a technological “Big Bang” that could fundamentally change the ways in which we produce, consume, and manage energy and resources of all types. The Big Bang is being fueled by the increasingly widespread availability of:

- tiny—but affordable—sensors and devices;
- robust broadband networks and facilities;
- efficient means for using spectrum and other transmission media; and
- inexpensive storage for data and, hopefully soon, energy.<sup>1</sup>

The most commonly known facet of the impending Big Bang is the so-called “Internet of Things” or “IoT,” but the phrase’s reliance on the baggage-laden word “Internet” fails to capture the sheer breadth of its potential.

Whether the impending Big Bang will actually deliver fundamental change, however, depends largely upon our ability to adopt new approaches so that we

can efficiently meet real needs without becoming too focused on implementing technology for the sake of technology. If we lose sight of the forest because each tree is so promising, we will never recognize that the greatest benefits likely will be achieved through the intelligent use of infrastructure to efficiently serve numerous purposes while increasing reliability through increased redundancies and better security. To avoid this risk, we all may need to rethink our approach to using technology for producing, consuming and managing energy and resources of all types.

Most successful “disruptive” technologies share at least one of the following two traits:

- Adoption of the technology results in at least a ten-fold reduction in cost.
- The technology provides an easier means for solving an existing problem or accomplishing a common task.

Drastic cost reductions often reflect the leveraging of new technology to implement a radically different approach to service delivery or cost recovery. While new technologies enable costs savings by reducing the amount of facilities needed for communications and monitoring, drastic cost savings typically occur only when the efficiencies made possible for each individual user are

pooled to magnify the savings for all users. Put simply, doing better is not enough—doing differently is the key to achieving transformative cost savings.


Aside from cost reductions, transformative disruption typically occurs when technology makes our lives easier in ways that are immediately obvious. Technologies that require complicated explanations or that solve problems nobody believes—or realizes—they really have will struggle to be adopted, even if they could, in theory, deliver real cost savings.

The ability to communicate with sensors and equipment is the key to reaping the benefits of new smart technologies. Fortunately, most of the technologies do not need expensive, dedicated connections because they can efficiently use available bandwidth, typically by sending small messages on an as-needed basis. This means that relatively little bandwidth needs to be allocated to any individual function, which in turn means that several functions can efficiently share the same available bandwidth so that the costs of each functionality is greatly reduced.

Specifically, cost savings can be magnified dramatically if several systems with similar communications needs can be accomplished using the same facilities so that the costs of

<sup>1</sup> See, e.g., Vishal Shah and Jerimiah Booream-Phelps, Deutsche Bank Markets Research, F.I.T.T. for Investors Crossing the Chasm (Feb. 27, 2015) at 49 (“Using conservative assumptions and no incentives, our model indicates that the incremental cost of storage will decrease from ~14c/kWh today to ~2c/kWh within the next five years.”).





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The growing discussion about Smart Cities suggests that we may now be beginning to think about these technologies in a way that could lead to fundamental and transformative changes in the way we produce, consume and manage energy and resources of all types.

deployment, maintenance and security can be spread across several functions (e.g., electric, water, natural gas, traffic, law enforcement, etc.) rather than duplicated individually for each function. It is not difficult to imagine how infrastructure that facilitates multiple functions could lead to dramatic cost reductions when connected to nodes of an interconnected, secure communications network.

Rather than serving solely as a streetlight or utility pole, a next generation pole could also host antennas for Wi-Fi and mobile networks and countless sensors for smart transportation, gunshot detection and law enforcement cameras, among others, with the cost shared among all of the entities relying on those functions. Cost sharing in this way could lead to the type of drastic cost reductions that are a fundamental characteristic of successfully disruptive technologies.

Achieving this goal would, of course, require more coordination across various public and private entities than what we have today, but the potential benefits are so dramatic that we can no longer refuse to engage out of misplaced concerns about lack of network security or the difficulties of coordinating actions with other entities. Coordination could be accomplished without endangering security, and the network could be managed by a private entity, a coalition or consortium of private entities, a governmental entity or a public private partnership. So long as the basic goals of the users are generally aligned, any number of means could be used to ensure that the goals are met.

Smart Grids, to date, have not fundamentally transformed the ways in which we consume and manage energy and resources. Where the benefits to the public

were perceived as being too slight or too difficult to understand, Smart Grid deployments have been met with skepticism and low adoption rates, which further decreased the benefits to the public. The technologies that underlie Smart Grids have allowed some utilities to deliver and manage services more efficiently, which has delivered real benefits to the public. But these types of technologies can deliver so much more when they are deployed in a way that facilitates dramatic cost reductions and delivers clear and immediately understandable benefits. The growing discussion about Smart Cities suggests that we may now be beginning to think about these technologies in a way that could lead to fundamental and transformative changes in the way we produce, consume and manage energy and resources of all types.

## Establishing redundant and self-healing communications networks

The Smart City concept ultimately works only when necessary communications are reliable and robust, which means that the underlying network must be redundant and secure. The key to developing a highly redundant, stable and self-healing network is to deploy a mesh network where each node in the network is connected to every other node without needing to pass through a centralized controller. If methods of interconnection between nodes are also diverse, including, for example, diverse fiber and wireless connections, then systems will remain stable even if individual lines are disrupted: routes will automatically reconfigure themselves based on the availability of viable communications lines and nodes.

This network configuration also permits the isolation of specific nodes as needed if problems arise, which can facilitate testing and repair of individual nodes and links without requiring disruption of the entire network. Furthermore, in terms of security, in contrast to traditional centralized hub and spoke networks, any given node in a mesh network will suffer an outage only if every connection to the node fails, which is unlikely, and the failure of a single node does not cause the type of cascading failures to other nodes that can plague hub and spoke networks.

Although the deployment of widespread mesh interconnection may seem daunting, the resulting efficiencies and associated savings can be quickly realized. For example, Scottsdale, Arizona recently implemented a wireless mesh network where video cameras placed at intersections throughout

the city monitor and communicate information about traffic flows, thereby enabling operators to respond to accidents and traffic issues promptly, and reducing costs needed for police traffic management.<sup>2</sup> The city estimates that changing its network from leased-line to mesh will enable it to save \$250,000 a year in leasing fees alone, allowing it to earn a full return on investment in four years.<sup>3</sup> Scottsdale provides a prime example of how interconnected networks can achieve results that were previously only available on an individualized system basis; where the same resources were previously needed for each individual system to monitor and communicate, mesh networking allows cities to observe and respond on a cheaper, faster, and more accurate basis.

## Creating and maintaining consumer engagement and trust

Successful deployments of Smart Cities also depend upon establishing citizen engagement and maintaining consumer trust. Citizen engagement is the key to success because citizens' actions drive responsive technologies. Current Smart Grid systems are typically subject to almost entirely centralized control, where utilities govern all communications and decisions and consumers serve as data inputs. However, a recent study out of Max-Planck-Gesellschaft found that a decentralized smart grid, whereby intelligent power meters can monitor power supply and demand from the end-user side and can act on an entirely self-organized basis, *i.e.* without needing the permission of the utility before adapting usage, would not only be

feasible, but would be more efficient and beneficial in the long run.<sup>4</sup> Decentralized smart grids would give consumers more direct control over their energy use, as consumers could observe patterns and costs and take real-time actions to change their behaviors. Cities and utilities could easily implement incentives for consumers to adopt new energy management technologies, which should only further engagement.

Giving consumers control could also go a long way to establishing and maintaining the trust that is essential to making Smart Cities work. If consumers do not trust the entities managing smart technologies, they will not adopt the technologies, no matter how beneficial they may be. Careful consideration of how to communicate with consumers regarding when, where and how data will be collected, and what will be done with collected and generated data is crucial. The communications must be truthful and transparent, and thus the collected and generated data must be secured and used only to achieve the goals communicated to the consumers. Rather than a limitation, however, remaining true to the stated purposes for the functions of the network will go far in ensuring its success.

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<sup>2</sup> Billy Zalud, How Mesh Networks Form the Backbone of Smart Cities, *Security Magazine* (Dec. 1, 2013).

<sup>3</sup> Id.

<sup>4</sup> Benjamin Schäfer, Moritz Matthiae, Marc Timme, Dirk Witthaut, Decentral Smart Grid Control. *New Journal of Physics*, 2015; 17 (1): 015002 DOI: 10.1088/1367-2630/17/1/015002.





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Net metering rate structures are the subject of active policy debates in more than 20 US states.

# The Policy Debate Over Distributed Generation

By Jeffrey Lane and Jennifer Morrissey

US electric utilities currently face a number of important challenges. Power generation infrastructure is aging. Demand is flat. New environmental regulations require different choices in energy sources. And distributed generation (DG) options give utility customers opportunities to generate their own electricity and to even consider going “off-grid.” State regulators must deal with the dynamic changes in the electricity sector while maintaining reasonable rates for utility customers and working to ensure a reliable and resilient electric power grid. This is a delicate balancing act which, if not achieved, may have dire consequences not only for utilities but for all stakeholders.

Issues surrounding DG have centered on the dramatic increase in residential rooftop solar, as we discussed last year in [Volume 2 of “Game Changers Impacting the US Energy Sector.”](#) In the longer term, improvements in battery and storage technology have even more potential to disrupt the traditional utility business model.

One of the key issues for debate in connection with rooftop solar is net metering, a method of compensating consumers who use grid-connected residential photovoltaic solar panels to generate electricity. Generally, with net metering the owner of the

residential solar installation pays the retail residential rate for electricity purchased from their local utility and is compensated at this same rate for any surplus electricity output that the customer feeds back into the utility’s network. The customer’s meter records show how much energy is consumed on-site and how much is sold to the utility’s grid, with the difference in kilowatt-hours either charged or credited to the customer, usually at the retail rate.

One problem is that this rate does not necessarily reflect fixed costs of maintaining essential transmission and distribution infrastructure. Critics argue this system unfairly benefits the residential solar customer by shifting those costs to other utility customers, even though the customer with rooftop solar still needs the infrastructure, first to enable it to sell excess power back to the utility, and second, as a back-up for times when the sun is not shining. DG power also can create added strains to the grid. For example, the flow reversal may result in balancing problems as power flows in directions the system was not designed to accommodate. It also may create challenges in detecting faults when they occur. DG can be incorporated into the grid, but depending on the scale, it may require a utility to make capital investments to maintain system reliability.

Another problem is that utilities do not always need the excess DG power that they are required to take, or do not need it at the times that it is provided. Significant technological developments have been made to aid the utility in forecasting load and supply. However, intermittent resources like solar and wind can change quite suddenly; but the large-scale generation that serves as back-up usually cannot ramp up or ramp down as quickly.

At present, net metering rate structures are the subject of active policy debates in more than 20 US states. (In fact, there are only a handful of US states that have not adopted a net metering policy of some form, although the application and implementation of those policies vary.) These states are considering issues such as the appropriate price for excess DG power that is sold back to the utility grid; how to make sure utilities can recover the fixed costs associated with DG customers; and how to reflect properly in electricity rates the value that solar DG provides to the utility grid.

California represents 50-55 percent of the US solar DG market. Under California law, the California Public Utility Commission must finalize and propose a new net metering program by the end of this year to go into effect in mid-2017. The Commission is actively considering



whether to lower the compensation paid to residential solar customers for excess solar sales back to their utility. The Commission will also establish policies and rules to guide utilities in developing plans to integrate distributed energy resources, including rooftop solar and other technologies such as storage and demand-side energy efficiency.

The Colorado Public Utilities Commission has been engaged in a year-long process to examine net metering in the state and the impacts of DG expansion. It has focused on rooftop solar. Not surprisingly, solar industry interests and the state's largest investor-owned utility company, Xcel Energy, disagree on the proper valuation of solar DG. It is unclear when the Colorado PUC will complete its process, but its options may be limited given that the state's renewable portfolio standard will likely necessitate continued growth in rooftop solar.

Net metering is not the only pricing model used for distributed generation. Some states are seeking to devise their own compensation methods in an attempt to capture the value of DG to the system. Another model, popular in Europe and under examination in a few states and localities, is a "feed-in tariff". This mechanism typically

involves a long-term contract between the utility and the DG provider. Rates vary depending on the utility, but at the end of the day, the utility will compensate the DG provider in a manner similar to a wholesale power producer.

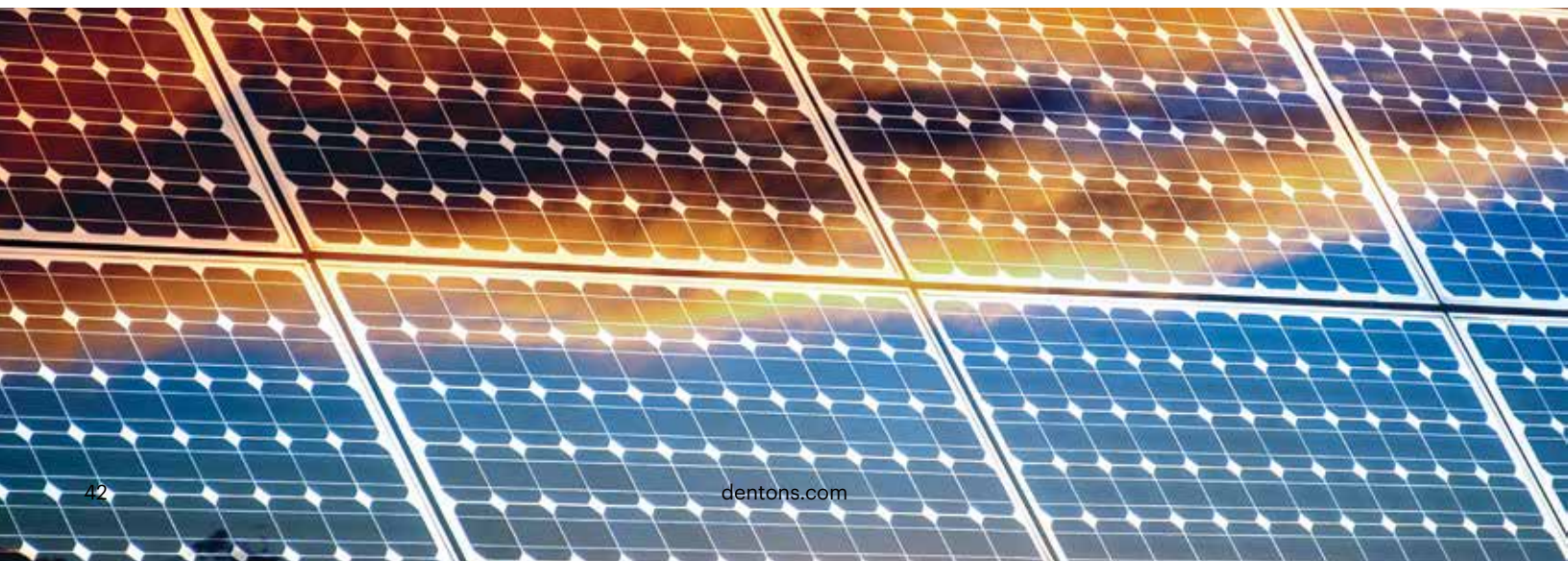
San Antonio's CPS Energy is in the midst of a pilot program to establish a program where solar installers would install, own and maintain solar energy systems, and would engage in a competitive bidding process with CPS Energy for residential and small commercial power-purchase agreements. The homes and businesses on whose roofs or property the panels are installed would not participate in the bidding, but would receive a credit on their electricity bills for rental of their rooftops. Still other states are seeking to devise their own compensation methods in an attempt to capture the value of DG to the system.

This February, the New York Public Service Commission issued an order adopting a regulatory framework and implementation plan that aims to "reorient" the electric utility industry and the ratemaking paradigm, creating a new advanced electric system that promotes customer engagement and two-way energy management between utilities and customers. The order would create for electric utility

companies the role of "Distributed System Platform Provider" (DSP), which would provide a technology platform and marketplace allowing distributed energy resources, including on-site generation, energy efficiency and storage, to compete fairly with the utilities' own distribution infrastructure. As DSPs, the utilities will have responsibility for integrated system planning, grid operations, and market operations.

New York's renewable portfolio standard program is set to end this year, but the organization that runs the program has already asked for funding of approximately \$1.5 billion over the next decade for large-scale solar, wind and other technologies to integrate these resources into the grid, as well as to create a market without subsidies and increase customer opportunities to procure clean energy.

As states and utilities continue to grapple with integrating DG, related issues are on the horizon. Tesla is building its "Gigafactory," which will produce the "Powerwall" and other batteries. The company claims that the Powerwall "charges using electricity generated from solar panels" and "offers independence from the utility grid..." The latter statement may be hyperbole for now, but it portends a future—whether it is the Powerwall or another battery storage technology





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## Utilities and regulators face a dilemma: Changes to net metering policies that make the compensation less generous to residential solar customers, or the imposition of (or increase in existing) fixed charges on those customers

that enables it—of even greater uncertainty for the traditional utility business model.

While grid defection by electricity customers may eventually be an option, solar-plus-storage systems that remain connected to the grid are presently more viable. Distributed energy storage systems can capture solar power and deliver it when it is needed most. As retail electricity prices from the grid increase and solar and battery costs decrease, DG customers will likely reduce their grid purchased power.

According to a recent study by the Rocky Mountain Institute (RMI), grid-connected solar-plus-storage will eventually become cost-effective for both residential and commercial customers in all markets. For residential customers, the study concludes that it could be “optimal” to have grid-connected solar-plus-storage as soon as next year in Hawaii, where electricity rates are high, but it may not be economical in the lower-cost Southeastern US until 2042. In another study, RMI projected that over the next 30 years solar-plus-storage systems that are *not* connected to the grid would also become economical for millions of Americans.

However, RMI predicts that even as solar and storage costs go down, only a relatively small number of customers would detach entirely from the grid. The report’s authors

argue that these DG customers will provide value back to the grid, including upgrade deferrals, congestion relief and ancillary services. The report notes that in order for utilities to realize these opportunities, new business models, regulatory reforms and pricing schedules will need to evolve.

So utilities and regulators face a dilemma: Changes to net metering policies that make the compensation less generous to residential solar customers, or the imposition of (or increase in existing) fixed charges on those customers, which could, over time, drive them to the emerging battery storage market and encourage them to partially or completely leave the power grid. The question for those DG customers will then be whether maintaining some connection to the grid is more economical than incurring the added cost of purchasing a stand-alone solar-plus-battery system. For utilities and regulators, the question will be how to realize benefits and value from the more limited relationship that may be established with these customers.

The Obama Administration’s recently released Quadrennial Energy Review, designed to provide a roadmap for the nation’s energy policy, summarizes these challenges and opportunities well in laying out its policy framework for grid modernization: “The future grid

should provide balanced support for both decentralized power sources and the central grid. As the costs of decentralized power sources and storage continue to fall, there will be increased opportunities for end users to partially or completely supply their own electricity. At the same time, the vast majority of American homes and businesses will continue to rely on the power grid for some or all of their electricity. It is essential, then, that investment in both centralized and decentralized systems occur in a balanced manner, preserving high-quality service for all Americans while simultaneously enabling new options and services that may reduce energy costs or climate impacts.”

Can we, as the statement suggests, essentially have it all? Encourage distributed generation, but maintain a resilient and reliable grid that is affordable for those millions of Americans who continue to rely on it? Provide “high-quality” electricity service while at the same time enabling new options that not only reduce costs but mitigate climate change? Those are the questions, and the daunting challenges, facing our utility industry, its customers and the state and federal regulators and policy makers charged with overseeing an electricity sector in the midst of rapid change.

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Firms pursuing energy storage technologies should see sustained high demand for their products by utilities, grid managers and others over the coming years.

# Recent Developments in Energy Storage

By Emma Hand

The lack of effective, commercially available and affordable electricity storage remains a significant challenge to the integration of renewable resources—both utility-scale and customer-side distributed generation—into the electrical grid. However, thanks to the strong consumer pressure on utilities to procure more of their electricity from clean energy resources, there is now a considerable movement afoot to develop new technologies that can meet this need.

In January of this year, Navigant Research published a study that projected that rapid innovation and deployment of advanced batteries and other technologies that store wind, solar and other forms of distributed energy will drive a 33-fold increase in the energy storage market over the next 10 years. The study predicted that the market will expand from roughly \$452 million last year to more than \$16.5 billion by 2024. The report suggested that firms pursuing energy storage technologies should see sustained high demand for their products by utilities, grid managers and others over the coming years. Navigant Research did note that the sector remains challenged by the need for further cost reductions, software and controls and integration expertise.

Another study, performed by HIS Technology in December 2014,

projected that the global market for storage solutions for grid-connected residential photovoltaic energy installations will grow tenfold to reach more than 900 MW by 2018.

That study found that given the economic trends of feed-in tariffs, electricity prices and the cost of energy storage technologies, PV systems with storage technology will offer a greater return on investment than those without storage technology by 2016 on systems with big solar markets. The report noted that this will be particularly true for markets where self-consumption is especially attractive, like Italy, Germany, the UK, Australia and Japan, and will be less true for markets such as the US where storage would likely be used primarily as back-up power.

Among US states, California is leading the way on electricity storage. The California Public Utilities Commission recently adopted the first energy storage mandate in the US, ordering the state's three major investor-owned utilities to procure 1,325 MW of storage by 2020, in part to reduce the need for new natural gas-fired plants. Southern California Edison announced plans in December to obtain 264 MW of energy storage capacity. It also stated that it intends to try Ice Bears, devices that make ice at night to use for cooling buildings during peak daytime hours. PG&E is operating and testing two battery projects:

the Yerba Buena project, a 4 MW sodium-sulfur battery, and the Vaca-Dixon project, a 2 MW battery storage project.

The US Department of Energy has also taken an interest in electricity storage technology and has requested an increase in its proposed budget for funding for energy storage research and development through both its Office of Electricity and its Energy Efficiency and Renewable Energy division. The DOE's Advanced Research Projects Agency - Energy (ARPA-E) is also heavily involved. At its 2015 annual summit it presented some of its energy storage projects, including an aluminum-air battery being developed by Phinergy and Alcoa, 17 projects related to flow batteries being conducted by companies such as ITN Energy Systems and Teledyne Scientific & Imaging, and a project by a team at UCLA to develop a method to store heat from concentrating solar power plants that uses supercritical fluids.

Tesla is also moving into the field, announcing in April that it will begin shipping two versions of its home battery this summer. It is offering both a 10kWh model and a 7kWh model of its rechargeable lithium-ion battery designed to store energy at a residential level for load shifting, backup power and self-consumption of solar generation. The reception of Tesla's home battery has been





Many other companies in this space have recognized the potential benefits of developing electricity storage technologies.

mixed, with critics pointing out that whether it is economical for a residential consumer depends heavily upon whether they have solar panels and/or time-of-use pricing and whether they are truly competitive with the cheaper already-available lead-acid batteries on the market. Nevertheless, Tesla has a “Gigafactory” under construction outside of Reno, Nevada, roughly 30 percent of which will be devoted to making batteries used in stationary storage.

There are many other companies in this space which have recognized the potential benefits of developing electricity storage technologies. Compressed air energy storage systems have been deployed in a few commercial sites and are expected to be deployed on a large scale as part of a massive integrated energy, storage and transmission project being built by the Pathfinder Wind Energy Group. Researchers at Oregon State University are developing a new process to create nanoporous graphene that will use CO<sub>2</sub> in the process of making storage products that are green and low-cost. Coda Energy has announced the completion of the largest behind-the-meter li-ion energy storage system in the Los Angeles basin, a 500 kW unit installed at its manufacturing facility.

Energy storage solutions typically fall into one of two categories: those suited for large grid applications and those suited for small grid applications. Energy storage technology best suited for large-scale applications is characterized by high-energy, long discharge duration. Examples of this type of energy storage technology include hydroelectric pumped storage and compressed air energy storage. To date, hydroelectric pumped storage is the only commercially-proven bulk energy storage resource

available and is the only one to have successfully demonstrated its ability to provide substantial energy storage functionality for bulk electric system support. Energy storage technology best suited for small-scale applications is characterized by high-power, short-discharge duration used within fractions of seconds to improve reliability and power quality in localized applications. Examples of this type of technology include capacitors, flywheels, batteries and superconducting magnetic energy storage devices. Generally speaking the smaller, localized storage battery applications are not yet cost competitive and have not yet been widely implemented.

And of course, as the technology begins to gain widespread traction, we will see the inevitable battle over how to regulate large-scale energy storage assets. The Energy Storage Association is urging for energy storage to be counted as a viable method of compliance with the Administration’s Clean Power Plan. The ESA argues that states need to enact better policy and market rules to enable storage systems to compete head-to-head with generators. The ESA would like to see a regulatory framework that allows storage systems to compete with peakers to provide peak generation.


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After the tech bubble, the credit bubble and the housing bubble, one would think—what with the recent oil price crash—the people who finance E&P companies would have learned their lesson. But not yet.

# Dancing with the Bear: Challenges for E&P Companies in the Unconventional Oil Market Are Not Quite Over

By Kwame Nkrumah Cain, Bob Richards and Ryan Sears

“When the music stops, in terms of liquidity, things will be complicated. But as long as the music is playing, you’ve got to get up and dance. We’re still dancing.”

*Chuck Prince, CEO of CitiCorp*

After flowing downhill throughout the second half of last year, the price of West Texas Intermediate (WTI) crude oil (as of the date this article is being written) has settled at about \$60. Natural gas has faced a similar decline. Might the worst be over? Not yet. Credit Suisse believes that between 1864 and 2008, the four oil bear markets lasted on average two decades and the shortest 11 years. Expect more pain ahead for many exploration and production (E&P) companies who focus on shale oil, deep water oil or oil sands (collectively, “unconventional oil”) which requires \$90 long term prices in order to be economical. If commodity prices settle at or near today’s prices, many E&P unconventional oil companies may face a liquidity crises while others will require either in-court or out of court restructurings.

## **Weak global demand**

The immediate cause of the present oil price collapse is found in increasing production and weak demand for all commodities and loans since 2008 despite the herculean efforts of central banks to restart global demand via ultra loose monetary policy. Since the Financial Crisis of 2008, the US Federal Reserve and central banks across the world have increased debt, artificially kept interest rates low and devalued their currencies.

However, high-income countries remain stuck in what the Jerome Levy Forecasting Center calls a “contained depression”. The extended period of ultra-loose monetary policy, including both exceptionally low interest rates and huge expansions in the balance sheets of central banks, is one indicator of this. Another is the size

of fiscal deficits in a number of high-income countries. Yet another is the weakness of economies, despite the scale of the policy support.

A US-led supply surge from high-cost unconventional fields such as the Bakken, Eagle Ford and the Permian Basin outstripped demand last year and sent oil prices spiraling downwards. The rout deepened in November 2014 after OPEC, led by Saudi Arabia, its largest producer, refused to cut production. The key to recovery is demand. Saudi Arabia’s main goal is to restart global demand for oil and to make cheap oil preferable to unconventional oil and to renewable and alternative forms of energy to the extent possible.

## **Liquidity crisis**

Unconventional oil boomed after late 2001 when oil prices moved



higher than \$90. An endless flow of easy money was available (through high yield bonds, loans, joint-ventures and equity share offerings) to fund spending that frequently exceeded cash flow. After the tech bubble, the credit bubble and the housing bubble, one would think—what with the recent oil price crash—the people who finance E&P companies would have learned their lesson. But not yet. For the past several years, and despite the once again widening gap between capital spending and cash flow, financiers have stepped in like an overindulgent uncle to pay for the producers' drilling habit.

There is an astonishing amount of debt that continues to build up on the smaller E&P companies' balance sheets. The financial performance of most companies involved in unconventional oil has been characterized by chronic negative cash flow and ever-increasing debt. But for the availability of subordinated debt, many E&P companies would have had to file for bankruptcy or shut operations

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## Financiers have stepped in like an overindulgent uncle to pay for the producers' drilling habit.

already—at some point their balance sheets will be fully leveraged and additional debt will be much harder to obtain (and existing debt will push for repayment or an exit strategy).

Will there be a halt to the madness of permanent negative operating cash flows? The most important dates on independent oil people's calendar are the "redetermination dates" for their reserve based lending facilities (RBLs), which are usually in April and October. That is when the banks calculate the amount of collateral producers have to offer in the form of producible, deliverable hydrocarbon reserves. The value of reserves is not figured on the WTI spot price on a given day in October. Rather, it is usually based on a trailing 12-month average of WTI, less any "basis", or discount, likely to be imposed on

the E&P company's output, mostly accounted for by differentials in transportation cost or product grade.

If bankers reduce the RBL borrowing base for E&P companies, then two scenarios might occur: (i) private equity or high yield investors with covenant light deals may take their place or (ii) drilling and producing on uneconomic terms will slow which will lead to insolvencies, cutback in activity and eventual price recovery for rational, hardy survivors.

It is unclear how long E&P companies can weather the storm at current prices. In the US, oil companies in some regions can operate quite happily at lower oil prices. According to Credit Suisse, the lowest production cost regions are in areas such as Marcellus (West Virginia/ Pennsylvania) and Eagle



Ford (Texas). In these areas explorers can make profits with oil at about \$55 per barrel; in other shale regions it is higher. For the Bakken/Three Forks regions of North Dakota, that break-even price is above \$70.

### Major issues for 2015 and beyond: Oil and gas restructuring considerations

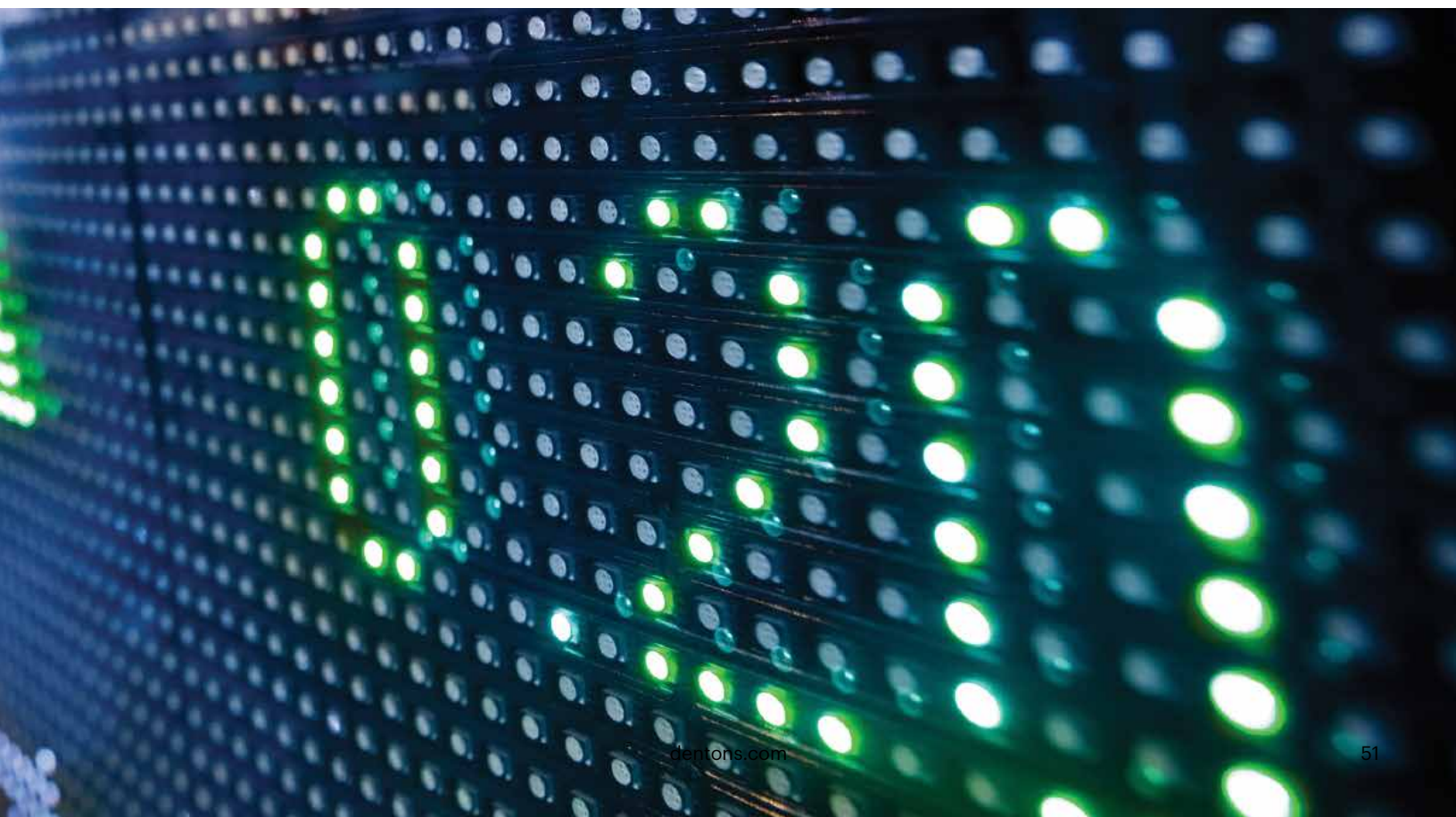
E&P companies facing excess leverage or insufficient cash flow may pursue restructuring strategies out of court and, if necessary, reorganization in court by filing for bankruptcy, most often under Chapter 11 of the United States Bankruptcy Code (Bankruptcy Code). The typical parties in an energy restructuring or reorganization include the company as debtor, management, secured lenders, bondholders, potential asset purchasers, trade vendors, service vendors, oil and gas lessors, contract counterparties under joint operating agreements, derivatives counterparties, co-working interest owners, farmors, farmees, production payment

counterparties, first purchasers and equity holders. Additionally, the Bankruptcy Code provides standing under appropriate circumstances for statutory committees of creditors and equity holders, and potentially for appointment of a bankruptcy trustee or examiner.

However, we have yet to see a full scale restructuring in the energy sector. Moody's reported that during the last two credit default cycles for E&P companies (1998-1999, 2001-2002), a majority of unsecured creditors received a range of 35-50 percent recoveries with an average recovery of 40 percent. This is better than the average industrial recovery of 29 percent. Fitch has reported similar numbers. From 2000-2013, the average recovery rate for energy was 45 percent compared to 37 percent for the total market. However, the spread on recoveries in any given year was relatively wide with a low of eight percent in 2001 and a high of 76 percent in 2001, looking at the Fitch data. It is important to note that as per Fitch, the comparative

default rates for energy have been relatively mild at 2.0 percent from 1980-2012, this compares to a 4.6 percent default rate for the overall market. According to S&P, lenders have seen par recoveries on RBLs in all distressed and bankruptcy situations.

It is important to note that bankruptcy is a tool and not a strategic plan by itself. Among the tools bankruptcy provides are (i) a breathing space from creditor payment demands and remedies, (ii) the ability to borrow funds or use cash collateral on a post-petition basis to fund its business, (iii) the ability to sell assets to fund operations, (iv) the ability to pay certain claims at a large discount over time, (v) the ability to bind holdouts and dissenting creditors and (vi) the ability to reject certain burdensome contracts and leases. Bankruptcy by itself does not solve problems such as ongoing revenue and pricing issues or the need for going forward capital and trade creditor support.





E&P cases also present some unique legal issues compared to most Chapter 11 cases, including (i) whether the personal property or real property rules apply (which provide for different rights and time periods), (ii) how special state law rights and priorities such as liens and royalties are treated vis-à-vis secured and other creditors, (iii) whether certain production payments are true sales or disguised financings and (iv) whether environmental and clean up obligations can be discharged in the bankruptcy and how such claims are classified and treated.

## US crude oil exports

The US Department of Commerce, Bureau of Industry and Security (BIS) regulates exports of crude oil under the Export Administration Regulations. In 1978, following the OPEC oil embargo, BIS implemented the Short Supply Controls, which generally prohibit crude oil exports, with limited exceptions. US shale oil developments are on the margin of being economically viable as a result of the drop in crude prices of more than 50 percent since last summer. At the current level of prices, the export ban is an even more urgent problem. Generally, E&P Companies (i.e. producers)/integrated oil companies are in favor of lifting the ban on crude oil exports while oil refiners (concerned that the price of oil will rise and increase their cost) and environmental groups (concerned about increased drilling, consumption and transportation hazards) are opposed. Obviously in this low-priced oil environment, tight oil producers are hoping for an end to the US oil export ban. The producers say that they cannot refine all the oil that they produce so they want to be allowed to export it. The refinery industry contests this claim and says that substantial capacity upgrades are in process that will allow this extra volume to be processed by 2016.

## Conclusion

It is unclear how long E&P companies can weather the storm at current prices. In the High Yield credit markets, liquidity will determine who will continue to dance combined with the quality of the assets in the best marginal cost unconventional oil plays. E&P companies with sustainable leverage, moderate to low cash burn and good hedging are ahead of the game. In addition, companies with termed out RBLs and working with a high percentage of current availability will also be well positioned to continue dancing. Furthermore, E&P companies that were able to execute on asset sales at pre-crises valuations are also well positioned. Whatever happens, the oil market must rebalance itself. The severity and duration of the current oil-price crisis is uncertain because it represents the culmination of almost a decade of monetary meddling and unprecedented capital availability. However, what is certain is that for some E&P companies, this will be their last dance.

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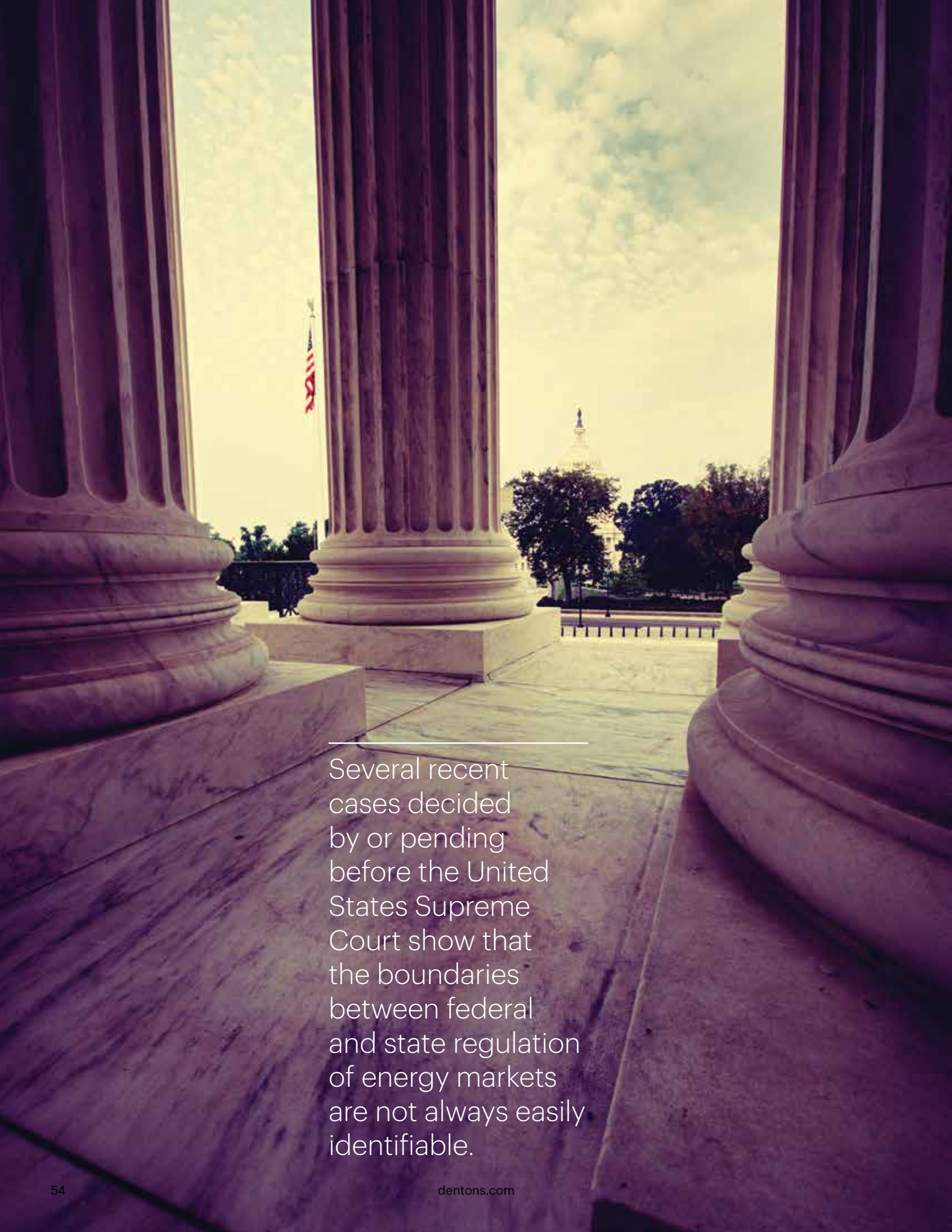
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Several recent cases decided by or pending before the United States Supreme Court show that the boundaries between federal and state regulation of energy markets are not always easily identifiable.

# Recent Jurisdictional Struggles Between FERC and States

By Jessica Lynch

As set forth in section 201(b) of the Federal Power Act (FPA), the Federal Energy Regulatory Commission (FERC) has jurisdiction over “transmission of electric energy in interstate commerce” and “the sale of electric energy at wholesale in interstate commerce.” FPA sections 205 and 206 further provide FERC with jurisdiction over rules, regulations, practices and contracts affecting any FERC-jurisdictional rate, charge or classification. FERC does not, however, have jurisdiction over “any other sale of electric energy” or “over facilities used for the generation of electric energy or over facilities used in local distribution or only for the transmission of electric energy in intrastate commerce, or over facilities for the transmission of electric energy consumed wholly by the transmitter.” Rather, the regulation of retail sales of electric energy, generation and local distribution are expressly reserved to the states.

The Natural Gas Act (NGA) establishes an identical framework for the wholesale and retail sales of natural gas. Although there are differences between the FPA and the NGA, courts have interpreted their analogous substantive provisions, including the relevant sections here *in pari materia*. Notwithstanding the seemingly clear jurisdictional divide between state and federal regulation, several recent cases

decided by or pending before the United States Supreme Court, show that the boundaries between federal and state regulation of energy markets are not always easily identifiable.

Recently, the Supreme Court issued *Oneok, Inc. v. Learjet, Inc.*, in which it was called upon to answer the question of what to do when a practice affects both wholesale and retail sales. The Supreme Court affirmed a Ninth Circuit decision that allowed state-law claims against natural gas companies concerning price-fixing to go forward, rejecting arguments that those state-law claims were preempted by the NGA. The parties to that case argued, and the District Court held, that (i) FERC has jurisdiction to regulate the conduct at issue (index manipulation of natural gas sale prices) because it affects wholesale and retail prices, and (ii) therefore state regulation of this conduct is “field preempted” because FERC’s jurisdiction over wholesale rates is exclusive and any state regulation of activities subject to FERC regulation is preempted.

The Ninth Circuit reversed, holding that the state law antitrust claims were not preempted, and the Supreme Court affirmed. Specifically, the Supreme Court found that FERC could regulate natural gas price index formation because it affected the rates for or prices of jurisdictional gas sales

while states could regulate the same activity to the extent it affected retail sales of natural gas. In doing so, the Court denied the Field Preemption claim of the petitioners. The Court explicitly did not consider whether any particular form of state regulation would intrude on FERC’s regulation under Conflict Preemption. The case stands for the proposition that in some situations, FERC and states may regulate the same activity, each to the extent the activity affects transactions subject to its jurisdiction, provided however, state regulation may not stand if it impedes FERC regulation of practices affecting jurisdictional rates or transactions, an issue the court did not reach because Conflict Preemption was not argued before the Court.

The *Oneok* decision may be instructive for three electric cases, described below, that are currently pending before the Supreme Court and which also involve the dividing line between FERC and state jurisdiction: *Electric Power Supply Association v. FERC*, 753 F.3d, 216 (D.C. Cir. 2014) (addressing FERC’s ability to regulate demand response); *PPL EnergyPlus v. Solomon* 766 F.3d 241 (3d Cir. 2014) (involving New Jersey’s attempt to incentivize construction of new generation within the state) and *PPL EnergyPlus v. Nazarian*, 753 F.3d 467 (4th Cir. 2014) (involving Maryland’s attempt to incentivize construction



of new generation within the state). [The Supreme Court granted FERC's petition for certiorari in *EPSA*; petitions for certiorari of *Solomon* and *Nazarian* remain pending.]

### ***Electric Power Supply Association v. FERC***

*EPSA* arises out of an appeal related to FERC's Order No. 745, in which FERC set the compensation for demand response at the locational marginal price (LMP) for the place and time the demand response is offered. FERC based its orders on demand response's two benefits: (i) it improves reliability and (ii) it lowers wholesale prices directly (by causing the wholesale demand curve to intersect the supply curve at a lower point) and indirectly (by pressuring wholesale generators to lower their price bids). The DC Circuit Court of Appeals found that Order No. 745 encroaches on the states' exclusive jurisdiction to regulate the "retail market," and vacated the rule in its entirety. In reaching this conclusion, the court established the following concepts and boundaries:

- FERC has exclusive jurisdiction over the wholesale market; states have exclusive authority to regulate the retail market. The broad "affecting language" of FPA Sections 205 and 206 do not erase the specific limits of FPA section 201 (which says that FERC's reach "extend[s] only to those matters which are not subject to regulation by the States.");
- FERC can regulate practices affecting the wholesale market under FPA sections 205 and 206 provided FERC is not directly regulating a matter subject to state control, such as the retail market;
- FERC cannot "lure" non-jurisdictional resources into the

wholesale market in the first place to create jurisdiction;

- The "lure" is change of the retail rate. Demand response is part of the retail market. It involves retail customers, their decision whether to purchase at retail and the levels of retail electricity consumption; and
- Although FERC may regulate where its rule incidentally incentivizes the construction of generation facilities, FERC cannot reach directly into the retail market to draw retail customers into its scheme.

### ***PPL EnergyPlus v. Solomon***

*Solomon* involved a challenge to New Jersey's Long-Term Capacity Pilot Program Act (LCAPP), which was designed to promote the construction of new generation facilities in the state. The State did not pay for the new facilities; rather, the Board of Public Utilities (BPU) crafted Standard Offer Capacity Agreements (SOCAs), that assured new electric energy generators 15 years of revenue from local utilities and, ultimately, New Jersey ratepayers. LCAPP guaranteed revenue to new generators by fixing the rates those generators would receive for supplying capacity. The Third Circuit Court of Appeals found that since FERC has exclusive jurisdiction over interstate rates for wholesale sales of capacity, the FPA preempts and therefore invalidates LCAPP and the SOCAs. In reaching this conclusion, the court found that FERC has exclusive jurisdiction to regulate interstate sales of capacity as part of its approach to regulating electric energy rates and FERC, through PJM, uses Base Residual Auctions (BRAs) to fix capacity prices that electric generators receive for the capacity they sell through PJM.

New Jersey, however, required that LCAPP generators receive both the federal price for interstate capacity sales and an additional amount fixed by the BPU. The court found that LCAPP attempted to regulate the same matter that FERC has regulated through PJM's Reliability Pricing Model (RPM). The court found that while New Jersey does have the authority to promote new generation resources, by enacting LCAPP it intruded upon FERC's exclusive jurisdiction. The court found that New Jersey can use the following means to achieve policy goals to incentivize new generation: (i) utilization of tax exempt bonding authority; (ii) granting of property tax relief; (iii) the ability to enter into favorable site lease agreement on public lands; (iv) the gifting of environmentally damaged properties for brownfield development; (v) the relaxing or acceleration of permit approval and (vi) direct subsidization of generators as long as the subsidies do not essentially set wholesale prices.

### ***PPL EnergyPlus v. Nazarian***

In *Nazarian*, the Fourth Circuit Court of Appeals addressed a program enacted by the state of Maryland to address its concern that PJM's RPM was failing to incentivize new generation by soliciting proposals for the construction of a new power plant. Specifically, pursuant to the program, the Maryland Public Service Commission (MPSC) offered the successful bidder a fixed, 20-year revenue stream secured by contracts for differences (CfDs) that the state would compel one or more of its local electric distribution companies. This program was approved in the "Generation Order." CPV Maryland, LLC (CPV) submitted the winning bid. Its CfDs required CPV to build a plant and sell its energy and capacity in the

wholesale markets. If CPV cleared the markets, it would be eligible for payments from the EDCs amounting to the difference between CPV's revenue requirements per unit of energy and capacity sold and its actual sales receipts.

The Fourth Circuit found that the Maryland program is preempted under the FPA, since FERC has exclusive authority to regulate wholesale sales of energy in interstate commerce and the Generation Order functionally sets the rate that CPV receives for its sales in the PJM auction. The court rejected arguments that the Generation Order falls on the states' side of the State Savings Clause,

since it is designed to ensure that Maryland has an adequate supply of generation capacity. The court found that while states have wide latitude in how they directly regulate generation facilities, they may not exercise this authority in a way that impinges on FERC's exclusive power to specify wholesale rates. In particular, the court found that while Maryland may encourage new generation through direct subsidies or tax rebates, Maryland cannot incentivize generation by setting wholesale rates.

As discussed, the FPA and NGA make clear that wholesale transactions fall exclusively within FERC's jurisdiction while jurisdiction

over retail transactions is reserved to the states. The Supreme Court has acknowledged this jurisdictional "bright line" between FERC and states' authority over wholesale and retail sales, but, as the cases described above make clear, state and federal initiatives and regulations often affect both wholesale and retail sales.

## Key contact



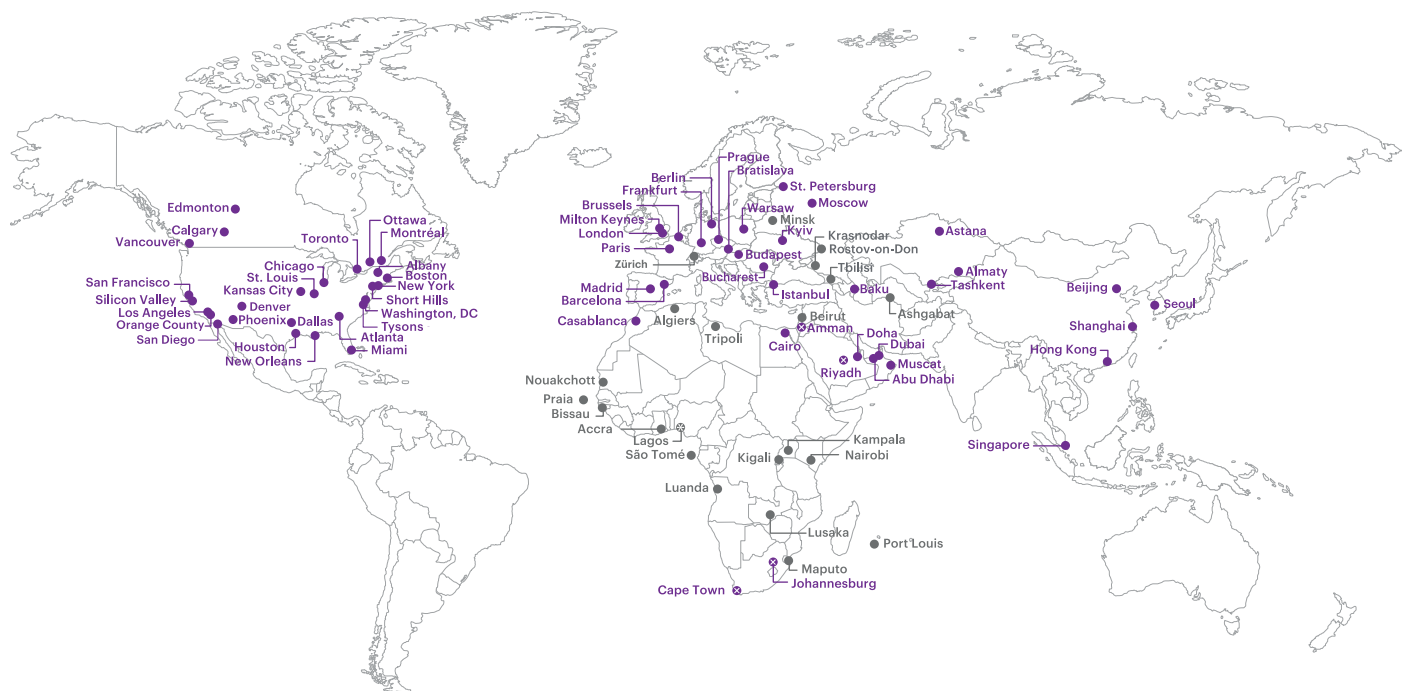
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