

## Elections

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energy. You are right: the roll-back movement had one partial victory in Ohio this year. Efforts were made in the last three years to roll back renewable portfolio standards in 14 other states and every one of them failed. I suspect there will be renewed efforts in those states.

MR. STANTON: I agree with that. These RPS mandates were originally passed over the objection of the incumbent energy suppliers. What happened in Ohio was telling. The state froze the RPS target, which had been scheduled to increase, for two years. Then, on the heels of that, it sought to unwind the deregulation compact by allowing American Electric Power, the dominant utility, to put two coal-fired power plants into its rate base and get cost recovery for them from ratepayers even though the units are owned by an unregulated subsidiary of AEP.

The story in Ohio was not just let's freeze the RPS target, but let's also double down on our support for traditional energy interests. Unfortunately, I think that we will see more of that. Truth be told, renewable energy interests just do not have the power that fossil and traditional incumbents have.

MR. MARTIN: There was not much federal leadership during the Bush administration on renewable energy and global warming. It led a number of states to act on their own. Perhaps it will happen again, although it sounds less likely than before because of the shift to Republican control.

John Stanton, are there other issues in play at the state level that could be affected by the elections?

MR. STANTON: Actually, I think the Bush administration did its part to promote renewables. They just wanted to do it in a very Republican way, which was to lower levels of taxation. The solar investment tax credit was extended to 2016 in 2008 with administration support.

MR. MARTIN: Jon Weisgall, are there other issues in play at the state level that could be affected by the elections?

MR. WEISGALL: The only thing that comes to mind is it is now quite clear there will not be any federal legislation on fracking. The industry probably should recognize that this makes it more likely that individual states will step in. Frankly, states have their fingers on the pulse of fracking politics and local concerns. That is the only one that comes to mind.

MR. GLICK: The Illinois and Kansas gubernatorial elections might have an effect on renewable energy.

In Kansas, Republican Governor Sam Brownback, who was

narrowly reelected, had been a very strong supporter of the state renewable portfolio standard. However, because it was such a close race and the Koch brothers put a lot of money behind his reelection effort, he has backed off somewhat from his earlier support, and another effort will almost certainly be made to repeal the state target.

Illinois also elected a Republican governor. Legislation is expected in Illinois about how Exelon can be compensated for the cost of its nuclear power plants. It is possible that the same bill could modify how the state pursues renewable energy targets. This will not be a roll back, but the modifications are not expected to help. The new governor is a blank slate on renewables. We are not sure what position he will take. He replaced a Democrat who was an Obama ally. ☺

## Renewables Face Daytime Curtailments in California

*by David Howarth and Bill Monsen, with MRW & Associates, LLC  
in Oakland, California*

As California marches toward fulfilling — and probably exceeding — a renewable portfolio standard (RPS) that requires 33% of its electricity to come from renewable energy sources by 2020, grid operators are beginning to face operational challenges that could have implications for existing renewable and non-renewable generators and that will shape opportunities for future projects.

For example, existing renewable generators might be curtailed more than in the past. If the system operator curtails renewables, then the generator might not receive full compensation for curtailed energy.

Existing gas-fired generators might need to increase their flexibility to allow for more starts, faster ramping and lower minimum levels of operation.

New projects — both renewable and conventional — may need to provide greater levels of flexibility or accept greater levels of curtailment.

The California Independent System Operator (CAISO) is concerned that there may be times when there is so much variable wind, solar and other renewable energy being scheduled onto

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its system that the other generators who will have to adjust to accommodate it will not have the flexibility needed to do so.

When scheduled generation exceeds scheduled demand in the hour-ahead market, the price of energy falls below zero in an attempt to balance supply and demand. In other words, when prices are negative, generators must pay others to take the electricity they produce. After accounting for changes in generation and load between the hour-ahead and real-time markets, if generation still exceeds load and there are no more generators willing to be paid to reduce their output, then the CAISO must order generators to curtail output in order to maintain system frequency.

Why would generation exceed load?

Some generators, such as nuclear, small hydroelectric and most geothermal and combined heat and power plants, need to run and have little ability to shut down because they have limited flexibility. A certain amount of gas-fired power plant capacity must also be operated at minimum levels to provide upward ramping needed later in the day or to provide ancillary services such as regulation and load following. If the combination of must-run generation plus gas-fired generation needed for system operations exceeds demand (particularly in low load hours), then the CAISO must take action.

### Growing Curtailments

The CAISO is already beginning to see these types of overgeneration events. (See Sidebar 1.) In February through April 2014, the CAISO had to curtail wind and solar generation four times for a total of six hours to balance supply and demand on its system. On one occasion, the maximum curtailment reached 485 megawatts of wind and 657 megawatts of solar. The impact on individual generators depends on the terms of their power purchase agreements, but typically there is no compensation for curtailment that is ordered by the grid operator.

In the absence of any changes to address the underlying issues, the CAISO forecasts overgeneration and renewable energy curtailment to increase in the future as more renewable energy is added to the system.

Looking ahead to 2024, which was recently modeled by the CAISO, curtailment is expected to remain relatively modest if RPS energy levels remain at 33%. Total curtailment is forecast to be less than two-tenths of 1% of the total RPS supply. However, if RPS energy levels increase to 40% (which has been proposed by California Governor Jerry Brown as an achievable goal), then the CAISO forecast of renewable / *continued page 14*

ny's applications. However, the judge declined to compel disclosure of other information, including what the Treasury paid on comparable applications, or information about how it developed its general screening policies or the lower benchmarks it used to make payments than the amounts for which the company applied. Discovery in the case is now scheduled to run into early August 2015, making a decision in the case unlikely before 2016.

The earliest decision in any of the pending lawsuits could come in early 2015 in a case involving a biomass project that the Treasury says qualified for only a partial grant because it produced both steam and electricity and only the part of the project related to electricity generation qualified for a grant. (*For earlier coverage of the biomass case, see the February 2013 NewsWire starting on page 27.*) The court is scheduled to hear arguments in the case starting on December 15.

In other developments, the Treasury said in October that grants approved for payment between October 1, 2014 and September 30, 2015 will be subject a haircut of 7.3% due to budget sequestration. The figure was 7.2% for grants approved for payment in fiscal year 2014. Sequestration will continue through fiscal year 2021 unless rescinded by Congress.

A technical corrections bill awaiting action in the "lame duck" session of Congress would clarify that Treasury cash grants do not have to be reported as income by companies paying taxes under the alternative minimum tax. The American Recovery and Reinvestment Tax Act made clear that the grants are not income for regular income tax purposes. However, Congress failed to say anything at the time about the alternative minimum tax. US corporations must compute their taxes under the regular corporate income tax and the minimum tax and pay essentially whichever tax is greater. The technical correction has been waiting for Congressional action since 2010.

*The IRS has given up waiting and feels it must enforce the law as / continued page 15*

## SIDE BAR 1

### A Duck Sighting

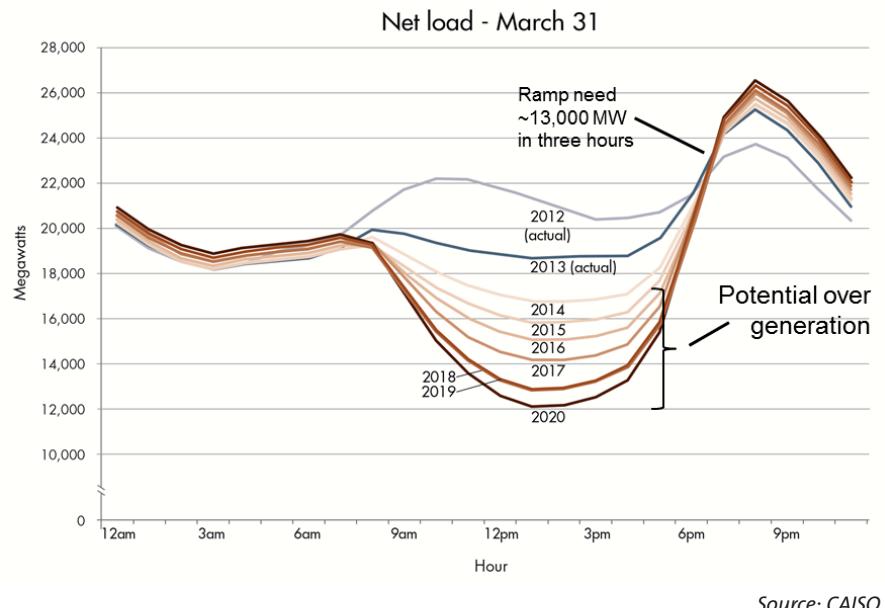
To illustrate the challenge posed by increasing levels of variable renewable generation, the CAISO has produced what has become known as the “duck chart.” The duck chart shows the net load on the system — that is, the electricity demand to be served by generation after subtracting the variable generation over which the CAISO does not have dispatch control — on a spring day with relatively high hydroelectric generation and low demand.

As shown in the chart, the “belly of the duck” grows in each successive year with the addition of solar resources that reduce the net electricity demand during the daytime. Already, the CAISO sees utility-scale solar on its system approaching 5,000 megawatts, plus an additional 2,000 megawatts of solar resources on the customer side of the meter. These solar additions have the effect of shifting the minimum net load from early morning to the middle of the afternoon (that is, from 3 a.m. to around 2 p.m.). The growing belly also contributes to the steep ramp to meet peak net demand after the sun sets. By 2020, the three-hour ramp (from 4 p.m. to 7 p.m.) is expected to reach 13,000 megawatts.

The effect of solar additions can also be observed in the changing distribution of negative real-time energy prices, which provide an indication of the risk of overgeneration. As shown in the chart below, the incidence of negative real-time prices in 2014 increased significantly during the middle of the day compared to prior years. However, there was no significant change in negative real-time prices during other periods.

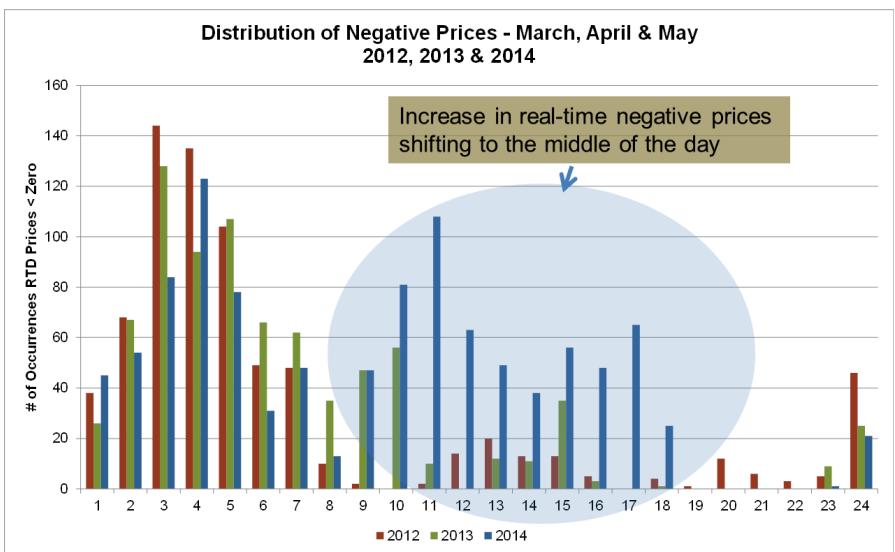
The overgeneration events that occurred in 2014 are also consistent with the duck-like shape of the net load curve. Only one event occurred at night (at 3:44 a.m.). The other three involved solar curtailments and occurred starting at 8:40 a.m., 11:11 a.m. and 12:40 p.m., respectively. On one of those days, April 12, 2014, energy prices were negative during 43% of the

### Chart 1



Source: CAISO

### Chart 2



Source: CAISO

5-minute real-time dispatch intervals. Based on observations of negative prices and curtailment in 2014, Brad Bouillon, CAISO director of day-ahead operations and real-time operations support, reported to FERC that “the belly of the duck has already arrived.”

## California

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curtailment jumps to more than 2.5% of RPS supply. (See Sidebar 2.) This means that a significant portion (15%) of the incremental renewable energy added to move from a 33% RPS to 40% would be curtailed. Under this scenario, which assumes a solar-dominated renewable energy portfolio, California would fall short of 40% renewable supply unless even more renewables were added to make up for the curtailed RPS energy, at considerable extra expense and with diminishing returns.

The CAISO has made certain market changes designed to improve the management of overgeneration through economic dispatch as well as to require utilities to procure enough flexible capacity to ensure reliable operation under a range of conditions. On May 1, 2014, the CAISO reduced its bid floor from -\$30 per megawatt hour to -\$150 per megawatt hour, with provisions to reduce it further to -\$300 per megawatt hour after a year.

In other words, if the market-clearing bids are at the floor price, then generators will have to pay \$150 per megawatt hour to deliver their electricity to the system.

By reducing the bid floor, the CAISO hopes to provide an additional incentive for renewable generators and less flexible conventional generators to provide market bids rather than simply operate as must-take resources. The CAISO has also implemented a 15-minute market to allow for intra-hour scheduling and to provide another opportunity for renewable generators to submit economic bids and adjust schedules close to real time, thereby reducing the likelihood of overgeneration.

The CAISO is proposing to establish a flexible capacity requirement to ensure that utilities have enough ramping capability. The CAISO is also proposing to procure backstop flexible capacity to meet any system-level deficiencies. The Federal Energy Regulatory Commission approved both proposals on October 16, 2014.

The specter of overgeneration may dampen demand for new renewable generation that would contribute to excess supply during certain hours. This appears to be especially true for solar photovoltaics, which have dominated recent RPS procurements as a low-cost resource and are driving down "net load," (which is equal to sales plus losses less must-take renewables) during the middle of the day. Baseload renewable generators such as geothermal and biomass should not necessarily expect a boost, however, since they also contribute to the */ continued page 16*

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*written until the technical correction is enacted. The correction would be retroactive as if included in the original statute.*

**REITS** continue to draw attention.

The comprehensive corporate tax reform bill that Dave Camp (R-Michigan), the outgoing chairman of the House tax-writing committee, released as a discussion draft in February would effectively return real estate investment trusts to their roots as vehicles for investors to pool capital to invest in office and apartment buildings and other real property, but rule out their use to own cell towers, billboards, transmission lines and similar business assets.

A REIT must hold at least 75% "real property" or mortgages on real property. It can also hold some assets through a taxable subsidiary that do not qualify for be held by the REIT directly. The Camp bill would define "real property" for REIT purposes to exclude assets with shorter depreciable lives than 27.5 years.

Harold Hancock, a tax counsel to the House tax-writing committee, told a DC Bar tax section meeting in late October, "A number of [businesses were] engaging in spinoffs that were not started as a vehicle for everyday investors to invest in real estate but instead were actual operating companies that figured out a way to put real estate into a REIT and then have the actual business operations be conducted in a [taxable REIT subsidiary]. We don't like these types of transactions."

The Camp bill is expected to serve as a starting point for drafting if the next Congress decides to take up corporate tax reform.

Hancock said timber is not treated as real property under the draft because the committee staff believes timber should be treated as inventory. He said the staff has discussed the issue at length with the timber industry, and he expects the discussions will continue.

Meanwhile, Martin Sullivan, an economist who writes for *Tax Notes* magazine, estimated in September that 20 corporations that have spun off timber, casinos, data */ continued page 17*

## SIDE BAR 2

### Forecasting Curtailment in 2024

The CAISO submitted testimony to the California Public Utility Commission in August 2014 based on modeling it performed of the electrical system in 2024.

The forecast assumptions were largely determined in advance by the CPUC with input from the California Energy Commission. There were five scenarios specified by the CPUC: 1) the current policy trajectory with a 33% RPS, 2) the current trajectory without the Diablo Canyon nuclear plant, 3) high loads, 4) a 40% RPS, and 5) expanded slate of preferred resources like energy efficiency and distributed generation.

The CAISO's curtailment forecasts for each of these scenarios are summarized in the table below.

Given a 33% RPS, the CAISO forecasts 96 hours of renewable curtailment, with a maximum curtailment of almost 6,000 megawatts. Total curtailed RPS energy is expected to be 153 GWh. Under a 40% RPS scenario, curtailments are forecast to increase to 822 hours with a maximum curtailment of over 13,000 megawatts. At 2,825 gigawatt hours, the amount of curtailed renewable energy in the 40% RPS scenario is forecast to increase by almost 20 times compared to the 33% RPS scenario.

The highest level of curtailment occurs in the expanded preferred resources scenario, which relies on energy efficiency and customer distributed generation to reduce net electricity demand significantly. In this scenario, renewable energy curtailments would occur during almost 1,200 hours (13% of all the hours in a year), with a maximum curtailment of almost 15,000 megawatts. Curtailments are lower in the scenario without Diablo Canyon since minimum generation levels would be reduced by removal of this baseload nuclear resource. There is relatively little difference in curtailments between the high load and trajectory scenarios because the renewable generation and loads both increase in proportion to each other.

Since the CAISO analysis does not include all of the capacity resources currently being procured to ensure local reliability in Southern California (following the modeling instructions provided by the CPUC), CAISO's assessment probably overestimates curtailment. This is because the approximately 2,000 megawatts of new capacity not included in the analysis is likely to be more flexible than much of the existing fleet and will reduce the minimum generation needed to be operating at a given time. However, with forecasted curtailments of up to 15,000 megawatts in the 40% RPS scenario, the CAISO will still need additional tools to address overgeneration in the future.

Scenario	Number of hours curtailed	Maximum curtailed (MW)	RPS energy curtailed (GWh)	RPS actually achieved
Trajectory (33% RPS)	96	5,927	153	32.9%
Trajectory without Diablo Canyon	24	3,383	26	33.0%
High load	87	5,841	136	32.9%
40% RPS	822	13,402	2,825	38.7%
Expanded preferred resources	1,165	14,599	4,637	37.5%

Source: CAISO

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problem of minimum generation levels. To the extent that such generators can be made dispatchable, they should be more valuable going forward.

**Generators in California may have to pay others to take some electricity they produce.**

## Potential Opportunities

There may be an opportunity for existing gas-fired generators to be part of the solution by improving their operating flexibility. However, it remains to be seen whether procurement mechanisms will develop that allow such generators to recover the costs of making flexibility improvements to their existing plants. When utilities procure new capacity resources — and with little or no load growth being forecast in California, it might be a while before they add to the procurement pipeline — we would expect flexibility characteristics to factor into procurement decisions. Projects that are able to ramp quickly and start multiple times per day will be preferred.

Storage facilities should also benefit from the situation since they can increase demand by charging during periods of potential overgeneration — while getting paid to store the excess electricity — and then use that stored energy to meet peak demand and provide ancillary services, thereby reducing the amount of gas-fired generation needed to operate at minimum levels to provide reserves.

Demand response may also be able to meet some of those peak ramping needs and reduce minimum generation levels.

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centers, prisons, cell towers and billboards recently into REITs or have announced an intention to do so, will save \$900 million to \$2.2 billion a year in corporate income taxes, assuming their earnings remain at 2014 levels. Sullivan said the estimates overstate the revenue loss to the government because they fail to take into account larger tax payments by the REIT shareholders, many of whom are individuals. REITs must distribute at least 90% of their income each year. Life Time Fitness Inc., which owns health clubs, saw its stock shoot up 15% immediately after it announced an intention to convert into a REIT in late August. Sullivan said, “Expect announcements like this to continue” when a company can increase its market capitalization by \$250 million “in a matter of minutes.”

REIT conversions can be expensive.

Iron Mountain, a data center company that spun off assets into a REIT as of January 1, 2014, said in its latest financial statements that it expects to have spent \$145 to \$155 million on legal fees, tax work, advisory fees and similar costs to convert over the period 2012 through 2014, plus another \$40 to \$45 million in capital costs such as reprogramming information systems to operate as a REIT, plus another \$15 million a year on REIT compliance.

*Equinix, a data center company, estimates its costs will run to \$84 million over the same period, plus \$5 to \$10 million in annual compliance costs. Penn National, a casino company that converted in 2013, estimated its cost to convert was \$125 million. “I can’t overemphasize the complexity,” the CEO said.*

**INDIA** lost a round in court over whether taxes can be triggered when a foreign parent company makes a capital contribution to its Indian subsidiary in exchange for shares.

The Bombay High Court said no in October in a case involving Vodafone.

India has been

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## California

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We would also expect to see changes in rate design with an emphasis on getting better price signals to customers to encourage load shifting to times of surplus generation, which might be in the middle of the day. This would be a reversal of historic conservation efforts designed to reduce consumption during historic peak periods such as noon to 6 p.m. in the summer months.

An unknown factor in addressing overgeneration is whether excess generation in California can be exported to other areas. The CAISO says that there have never been fewer than 2,000 megawatts of net imports into California, and therefore, it has assumed zero net exports from California in its modeling. With greater regional coordination, grid operators may be better able to dispatch resources across larger geographic areas, which should reduce the likelihood of overgeneration and curtailment. A first step in this direction was the creation of the energy imbalance market between the CAISO and PacifiCorp that began operating on October 1, 2014; this new market is expected to expand to include Nevada Power in 2015. The CAISO has indicated that it is open to greater regional cooperation, but will move slowly and only in collaboration with other balancing authorities in the West.

The CAISO recently put the overgeneration issue front and center, making it a major theme of its annual stakeholder symposium in October. It hopes that by raising these concerns now, California can avoid the reliability, environmental and economic impacts that would result from pursuing an expanded renewable energy policy without also addressing the concomitant integration issues that threaten to undermine the policy.

Given this attention and the various tools available to regulators and grid operators to address the underlying causes of overgeneration, it is not a given that the CAISO's forecasted curtailment levels will actually occur during the 10-year time horizon that was modeled.

In fact, preliminary results from the California 2030 low-carbon grid study being performed by the National Renewable Energy Laboratory and sponsored by a group of clean energy companies, foundations and trade associations suggest that, with substantial increases in energy efficiency, demand response and storage and greater cooperation across the West, California's electrical system in 2030 would be able to accommodate a diverse portfolio of incremental renewable

generation equivalent to a 50% RPS with minimal renewable curtailment to address overgeneration. ☉

## Corporate Inversions: Slowed But Not Stopped

*by Keith Martin, in Washington*

The US Treasury outlined six measures in late September that the Internal Revenue Service plans to implement in future regulations to discourage US companies from inverting.

The measures will apply to companies that invert on or after September 22, 2014. They are described in IRS Notice 2014-52.

The Treasury is still considering whether to take additional steps to discourage "earnings stripping." However, any such action could affect European and Asian companies with US subsidiaries since such companies tend to capitalize their US operations with part debt and part equity. The debt allows US earnings to be brought home in the form of interest, allowing it to be deducted in the United States. Any action to limit earnings stripping could increase the tax burden on inbound US investment.

### Inversion

In a corporate inversion, a US company with substantial foreign operations inverts its ownership structure to put a foreign parent company on top with the aim of keeping future earnings from its overseas businesses outside the US tax net. The foreign parent may also strip earnings from the US subsidiary by capitalizing the US subsidiary with debt so that earnings can be pulled out of the United States as deductible interest on the debt.

Congress amended the US tax code in 2004 to make it painful for US companies to invert. Most inversions today involve a merger of a US corporation with a smaller foreign corporation. The shareholders of the US company retain less than 80% of the shares of the combined enterprise. If they retain 80% or more, then the IRS will treat the foreign parent as a US corporation, subjecting it to tax in the United States on its worldwide earnings. If they retain at least 60%, then a toll charge is collected on any appreciation in asset value when the company leaves the US

## Mozambique

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Cove, a publicly-listed oil and gas explorer, approved a public takeover of the company by PTTEP (the national oil company of Thailand).

Cove held an 8.5% interest in one of the offshore gas fields in the Rovuma Basin (and a 10% interest in an onshore non-producing field), but structured the deal so that no Mozambican tax was payable on the capital gains, as the assets in Mozambique were not being sold, but rather the corporate group was being taken over. Consequently, the Mozambican government held up the proposed takeover and threatened to impose taxes on the sale as part of its consent process. Initial rumors speculated that the tax hit could be as much as 40%, although the eventual figure was settled at 12.8% and was accepted by the parties to the transaction.

This transaction followed swiftly on the heels of the Tullow Oil purchase from Heritage Oil in Uganda where an exit tax was imposed on Heritage Oil (that the company failed to pay) and held up Tullow Oil's future development of its upstream assets in Uganda. (*See the September 2014 Newswire starting on page 20*). A general concern for all investors is the fiscal stability of high margin cash generating projects in Africa, as there is precedent for host governments to take action and increase their shares of the pie. Therefore, good host governmental relations are absolutely key with any project. ☺

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Chadbourne & Parke LLP

chadbourne.com

#### New York

1301 Avenue of the Americas  
New York, NY 10019  
+1 (212) 408-5100

#### Washington, DC

1200 New Hampshire Avenue, NW  
Washington, DC 20036  
+1 (202) 974-5600

#### Los Angeles

350 South Grand Avenue, 32nd Floor  
Los Angeles, CA 90071  
+1 (213) 892-1000

#### Mexico City

Chadbourne & Parke SC  
Paseo de Tamarindos, No. 400-B Piso 22  
Col. Bosques de las Lomas  
05120 México, D.F., México  
+52 (55) 3000-0600

#### São Paulo

Av. Pres. Juscelino Kubitschek, 1726  
16º andar  
São Paulo, SP 04543-000, Brazil  
+55 (11) 3372-0000

#### London

Chadbourne & Parke (London) LLP  
Regis House, 45 King William Street  
London EC4R 9AN, UK  
+44 (0)20 7337-8000

#### Moscow

Riverside Towers  
52/5 Kosmodamianskaya Nab.  
Moscow 115054 Russian Federation  
+7 (495) 974-2424  
Direct line from outside C.I.S.:  
(212) 408-1190

#### Warsaw

Chadbourne & Parke  
Radzikowski, Szubielska i Wspólnicy sp.k.  
ul. Emilii Plater 53  
00-113 Warsaw, Poland  
+48 (22) 520-5000

#### Istanbul

Chadbourne & Parke  
Apa Giz Plaza  
34330 Levent, Istanbul, Turkey  
+90 (212) 386-1300

#### Dubai

Chadbourne & Parke LLC  
Boulevard Plaza Tower 1, Level 20  
PO Box 23927, Burj Khalifa District  
Dubai, United Arab Emirates  
+971 (4) 422-7088

#### Beijing

Beijing Representative Office  
Room 902, Tower A, Beijing Fortune Centre  
7 Dongsanhuan Zhonglu, Chaoyang District  
Beijing 100020, China  
+86 (10) 6530-8846

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