

# Natural Gas Week

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## NATURAL GAS WEEKLY SPOT PRICES

Flow Dates: 5/1-5/7

Price Point	\$/MMBtu	Chg.	High	Low	Avg. Daily Vol.	Avg. Daily Deals	May Bid Week
<b>GULF COAST</b>							
ANR SE	2.20	0.19	2.30	2.03	103,961	11	1.99
Col. Gulf - Erath	2.21	0.21	2.29	2.06	120,071	16	1.99
Col. Gulf - Rayne	2.22	0.21	2.30	2.06	210,017	31	1.98
Florida Zone 1	—	—	—	—	—	—	—
Florida Zone 2	2.24	0.19	2.31	2.11	10,423	2	2.04
Florida Zone 3	2.57	0.34	2.63	2.29	52,651	6	2.20
Henry Hub	2.29	0.28	2.33	2.09	213,629	26	2.03
NGPL-LA	—	—	—	—	—	—	—
Sonata	2.23	0.21	2.30	2.07	221,691	26	2.02
Tenn 500 So LA Z1	2.24	0.21	2.33	2.07	61,517	14	2.01
Tenn 800 So LA Z1	2.23	0.23	2.31	2.08	124,021	21	1.98
Tetco ELA	2.20	0.20	2.30	2.05	70,570	14	1.99
Tetco WLA	2.23	0.24	2.30	2.09	20,326	5	2.02
TGT Zone SL	2.20	0.21	2.26	2.08	14,843	2	1.98
Transco Station 45	2.24	0.32	2.31	2.10	30,571	8	2.04
Transco Station 65	2.27	0.25	2.33	2.09	127,397	18	2.04
Trunkline ELA	2.20	0.20	2.30	2.06	32,034	5	2.00
Trunkline WLA	2.23	0.18	2.30	2.11	13,200	2	2.01
Trunkline Zone 1A	2.20	0.19	2.31	2.06	115,943	14	1.98
Regional Average	2.24	0.22	—	—	—	—	2.01
<b>TEXAS (SOUTH/EAST)</b>							
Carthage Hub	2.22	0.19	2.35	2.06	50,914	7	—
HSC	2.26	0.28	2.34	2.05	69,457	6	1.96
Katy Hub	2.25	0.28	2.31	2.08	153,043	16	1.93
NGPL-South Texas	2.22	0.23	2.28	2.08	20,857	3	1.96
NGPL-TexOk	2.21	0.21	2.27	2.07	177,385	25	1.97
Tenn Zone 0	2.21	0.23	2.28	2.06	121,879	18	1.95
Tetco-East Texas	2.22	0.24	2.26	2.06	5,100	1	—
Tetco-South Texas	2.20	0.25	2.20	2.20	1,014	1	2.02
TGT Zone 1	2.22	0.22	2.29	2.07	196,843	27	1.99
Transco Station 30	2.19	0.26	2.28	2.04	41,944	6	2.03
Regional Average	2.22	0.23	—	—	—	—	1.97
<b>TEXAS (WEST)</b>							
El Paso Permian	2.19	0.23	2.25	2.05	124,214	16	1.92
NNG Custer	—	—	—	—	—	—	—
Transwes E of Thoreau	2.15	—	2.16	1.96	4,629	1	—
Waha Hub	2.23	0.24	2.35	2.06	227,213	20	1.90
Regional Average	2.21	0.23	—	—	—	—	1.92
<b>MIDCONTINENT</b>							
ANR SW	2.13	0.18	2.22	2.00	46,386	6	1.85
CenterPoint East	2.20	0.23	2.28	2.06	124,897	15	1.94
CenterPoint West	2.16	0.17	2.26	2.07	12,614	2	—
NGPL-MC	2.13	0.18	2.22	2.00	407,859	53	1.87
Oneok	2.13	0.17	2.19	2.02	16,686	3	1.86
Panhandle	2.12	0.18	2.20	1.99	83,981	14	1.88
Southern Star	2.13	0.19	2.19	2.00	70,107	10	1.80
Regional Average	2.14	0.19	—	—	—	—	1.88
<b>GREAT PLAINS</b>							
Emerson	2.28	0.11	2.33	2.12	228,082	18	2.10
NB Ventura TP	2.21	0.18	2.26	2.05	92,039	8	1.99
NNG Demarc	2.19	0.16	2.29	2.04	170,361	27	1.97

(continued on p.2)

## Gas Giant Chesapeake Rocked as Fresh Woes Surface for McClendon

It's been a rough few weeks for Chesapeake Energy, with the US gas giant and its outspoken chief executive, Aubrey McClendon, at the center of a series of increasingly negative headlines.

McClendon is no stranger to controversy, be it margin loan calls forcing him to sell the bulk of his shares in Chesapeake, a \$75 million bonus awarded for a year the company's stock price sank 60%, or the \$12 million personal sale of antique maps to the company (NGW Oct.20'08).

The latest controversy surrounds a well participation program that allowed McClendon to take a personal stake of up to 2.5% in each well Chesapeake drilled so long as he covered

(continued on page 19)

## Waste Management Goes Straight To Natural Gas for Its Entire Fleet

Houston-based Waste Management (WM) isn't experimenting with various alternative fuels anymore.

"[Our] primary strategy is convert to natural gas ... period," said Eric Woods, vice president of fleet and logistics. "We're pretty much committed to replacing our diesels with [an] NGV platform," he added. The company has been working at it since the 1990s, first going to LNG, then to CNG (compressed natural gas). He called it the company's "green-green," policy — environmentally sound, but also economically sound. The company hopes to convert the fleet over to CNG fuel gradually, and ultimately, their goal is to have their entire fleet run on CNG.

(continued on page 18)

## Chinese Firm Unveils a Drilling Package Targeting US Shale Plays

The leading builder of drilling rigs in China has its eyes set on what its president calls a huge market — the US.

And with the Offshore Technology Conference 2012 as an appropriate backdrop, the Sichuan, China-based Honghua Group unveiled a drilling rig package that was designed with North America's shale plays in mind.

"We see the US shales to be the busiest plays in the world, and the US will be a major market for us," Honghau President Zhang Mi told *Natural Gas Week*. "We see natural gas becoming even more important in the US and the shale plays continuing to be very busy."

(continued on page 10)

## NATURAL GAS WEEKLY SPOT PRICES (cont.)

Flow Dates: 5/1-5/7

Price Point	\$/MMBtu	Chg.	High	Low	Avg. Daily Vol.	Avg. Daily Deals	May Bid Week
NNG Ventura	2.17	0.15	2.28	2.04	45,298	7	1.97
Regional Average	2.23	0.12					1.98
<b>UPPER MIDWEST</b>							
Alliance	2.29	0.15	2.35	2.14	54,078	7	2.10
ANR ML7	2.38	0.16	2.43	2.24	8,596	6	2.25
Chicago Citygate	2.29	0.16	2.37	2.12	510,205	58	2.09
Consumers	2.32	0.13	2.41	2.16	206,740	31	2.19
MichCon	2.31	0.15	2.41	2.13	378,127	45	2.17
Regional Average	2.30	0.16					2.15
<b>SOUTHEAST</b>							
Tetco M1	2.24	0.21	2.33	2.07	62,963	11	1.99
Transco Zone 4	2.26	0.23	2.36	2.10	255,951	26	2.04
Transco Zone 5	2.41	0.22	2.54	2.26	39,073	4	2.12
Regional Average	2.28	0.22					2.04
<b>APPALACHIA</b>							
Col. Gas App. Pool	2.31	0.22	2.40	2.14	407,346	60	2.07
Dominion North	2.49	0.23	2.58	2.15	334,714	1	—
Dominion South	2.30	0.20	2.39	2.14	371,514	59	2.07
Lebanon Hub	2.30	0.20	2.43	2.15	107,714	14	2.07
Regional Average	2.35	0.21					2.07
<b>EASTERN CANADA</b>							
Dawn	2.49	0.19	2.56	2.29	755,704	54	2.31
Iroquois	2.55	0.02	2.68	2.45	175,747	26	2.42
Niagara	—	—	—	—	—	—	—
Regional Average	2.50	0.16					2.32
<b>NORTHEAST / MIDATLANTIC</b>							
Algonquin	2.48	0.08	2.65	2.31	308,293	37	2.32
Dracut	2.84	0.53	3.27	2.33	2,270	1	—
Iroquois Zone 2	2.54	0.06	2.70	2.44	87,488	9	2.42
Tenn Gas Zone 6	2.60	0.21	2.82	2.40	154,474	19	2.30
Tetco M3	2.42	0.20	2.55	2.27	284,838	34	2.19
Transco Z6 - Non-NY	2.42	0.23	2.55	2.27	146,520	26	2.14
Transco Z6 - NY	2.46	0.24	2.64	2.30	442,899	50	2.20
Regional Average	2.47	0.17					2.24
<b>ROCKIES</b>							
Cheyenne Hub	2.05	0.15	2.14	1.94	91,200	12	1.83
CIG	2.00	0.15	2.07	1.86	30,029	7	1.73
Kern River / Opal	2.04	0.12	2.16	1.86	540,214	43	1.87
NW Rockies	2.02	0.20	2.08	1.88	36,400	4	1.76
Questar	1.98	0.18	2.07	1.84	36,150	4	1.75
Regional Average	2.04	0.14					1.83
<b>SAN JUAN BASIN</b>							
El Paso Bondad	2.03	0.19	2.11	1.93	93,379	7	1.79
El Paso San Juan	2.07	0.18	2.17	1.92	487,280	38	1.85
Regional Average	2.07	0.18					1.85
<b>PACIFIC NORTHWEST/WESTERN CANADA</b>							
AECO	1.76	0.15	1.85	1.61	1,075,907	73	1.62
Kingsgate	2.04	0.21	2.11	1.91	37,457	3	—
Malin	2.10	0.16	2.19	2.02	250,129	23	1.89
NW Sumas	2.05	0.23	2.12	1.91	166,860	16	1.82
Stanfield	2.08	0.21	2.12	2.06	37,543	2	—
Westcoast Station 2	1.79	0.21	1.89	1.63	159,700	26	1.48
Regional Average	1.85	0.18					1.65
<b>CALIFORNIA</b>							
Kern - Wheeler Ridge	2.20	-0.01	2.26	2.03	5,714	1	2.11
PG&E Citygate	2.52	0.20	2.56	2.36	414,929	25	2.38
PG&E South	2.19	0.03	2.27	2.08	205,857	23	2.12
SoCal Border	2.25	0.09	2.36	2.16	871,929	59	2.16
SoCal Citygate	2.38	0.13	2.45	2.30	248,157	20	2.27
Regional Average	2.32	0.09					2.22
<b>WEEKLY COMPOSITE SPOT PRICES</b>							
Wellhead	2.21	0.20					
Delivered	2.33	0.20					

## US Proposes First-Ever Fracking Regulations for Federal Leases

The US Interior Department proposed new reporting and environmental regulations for natural gas development on Friday, giving the federal government new authority to regulate hydraulic fracturing or "fracking" on public lands.

The rule unveiled by the Bureau of Land Management would require producers to publicly disclose the components used in fracking, a controversial but prolific process that involves pumping water, sand and chemicals into the ground to allow oil or gas to flow more freely into a well.

If enacted in its current form, the rule would also set tough new standards for well-bore integrity in an effort to prevent leaks. The plan would also require operators to develop a management plan for the wastewater brought back up out of the ground after fracking has taken place.

The requirements would mainly affect operations in the Rocky Mountain region, where much of the land is owned by the federal government and overseen by the BLM (NGW *(continued on page 3)*)

### Breakthrough Reported in Hydrate Trial

A US-Japanese research project has kicked into high gear the search for unlocking the secret of onshore methane hydrates with success at a project on Alaska's North Slope.

The Department of Energy said that a research group has injected a mixture of carbon dioxide and nitrogen into a methane hydrate formation on the North Slope and have produced a steady flow of natural gas in the first field test of this method. Methane hydrates are ice crystal-like structures that contain natural gas and can be found under the permafrost and in every ocean in the world, as well as the Gulf of Mexico.

The research was conducted by ConocoPhillips, the Energy Department and Japan Oil, Gas and Metals National Corp. Japan Oil, Gas and Metals is also conducting hydrate research in a deepwater trench off the coast of Japan (NGW Aug. 1'11).

US Energy Secretary Steven Chu likened the news to the early days of shale research in the nation.

"The Energy Department's long term investments in shale gas research during the 70s and 80s helped pave the way for today's boom in domestic natural gas production that is projected to cut the cost of natural gas by 30 percent by 2025 while creating thousands of American jobs," Chu said.

"While this is just the beginning, this research could potentially yield significant new supplies of natural gas."

The DOE said it will offer \$6.5 million this year for further research on tapping methane hydrates, and will request an additional \$5 million for research next year.

The department added that building on this test, it is launching a new research effort to conduct a long-term production test in the Arctic. In addition, research is planned to test additional technologies that could be used to locate, characterize and safely harvest methane hydrates on a larger scale along the US Gulf Coast.

**John A. Sullivan, Houston**

# Fracking ...

(continued from page 2)  
Oct.10'11) (NGW Jan.24'11).

About 3,000 wells per year are have been fractured on federal land, according to the BLM. Federal land accounts for about 15% of US natural gas production.

The BLM argued that the steps should “ensure public confidence in well stimulation techniques and technologies.” The agency also said the regulations would be built “with appropriate protections for proprietary information” — a key concern of oil-field service contractors, whose fracking formulas are viewed as highly proprietary and competitive.

Many observers said the BLM’s proposal is only part of the federal government’s efforts to oversee fracking. The EPA has also tried to use its powers under air quality and toxic inventory laws to propose new regulations on fugitive emissions and wastewater associated with fracking.

Ben Salisbury, energy policy analyst for FBR Capital Markets, said the disclosure requirements proposed by the BLM “could help create an extensive database for future expansion of federal regulation.”

“The extensive reporting requirements could create a disproportionate cost burden for smaller operators,” he wrote in a note to clients. “The additional approval requirements for fracturing could add permitting delays and gives the federal government a greater opportunity to disrupt fracking.”

The proposal is open for a public comment period for two months. Industry groups will likely urge the BLM to include exemptions for operations that are already subject to strict drilling standards and disclosure rules from state governments.

“The proposal as drafted would create reporting requirements, regulatory impediments and certifications that could substantially affect the ability to produce resources,” warned Tom Amontree, executive vice president for America’s Natural Gas Alliance, a trade group of producers.

Kathleen Sgamma, vice president of government affairs for the Western Energy Alliance, said the rules will duplicate regulations in Colorado and Wyoming that already cover all types of land within their borders — federal, state and local.

“These rules will increase that redundancy,” Sgamma said. “However, while states taken on average 30 days to process a permit, BLM takes 298 days. The rules announced today [Friday] will only increase that permitting inefficiency.”

However, industry groups were generally pleased with the BLM’s decision to allow the disclosure to take place through an existing portal, [www.fracfocus.org](http://www.fracfocus.org). Many operators have started using the website to voluntarily disclose the fracking components of wells drilled across the country.

**Lauren O’Neil, Washington**

## US June Gas Futures Push Ahead; Market Muscles Through Setbacks

The US June natural gas contract whip-sawed last week but slid into the weekend with a 4.25% gain.

Friday’s 2.6% drop only skimmed the cream off the strong rally that erupted once prices had dipped to 10-year lows in the \$1.90s late last month. And prices were still 19.5% above those market lows at the close of business.

Last week saw strong volatility as market bulls latched onto news of declining US gas production, pushing the June contract

to an intraweek high of \$2.385 on Tuesday. In its latest production report, the US Energy Information Administration reported US lower 48 output slipped more than 400 million cubic feet per day to 72.32 billion cubic feet per day in February, a 0.6% decline from December (p20).

That came on the heels of the previous week’s announcements by ConocoPhillips and Encana of additional shut-ins of drier natural gas production, with Encana alone targeting 600 MMcf/d in cuts (NGW Apr.30’12). Last week, the second largest US gas producer, Chesapeake Energy, reinforced its commitment to rein in gas output, targeting a 6% decline in gas production next year, the first time Chesapeake has targeted lower gas output (p1).

But more than signs of a slowing natural gas supply juggernaut may have impacted the market last week. On Wednesday, the contract fell 5%, breaking a three-session 16.5% rally, a move Gelber & Associates analyst Pax Saunders largely attributed to news spreading that Centaurus Energy Master Fund would be liquidating its positions now that its founder John Arnold is retiring. On Thursday, June gas gained back 3.9% of the loss in the wake of an unusually light storage injection report and on Friday the contract saw a hefty fall from profit taking. Nonetheless, the market appears poised for gains in the week ahead as bullishness builds over the improving storage picture.

The EIA reported a 28 Bcf injection for the week ended Apr. 27, bringing working gas inventories to 2,576 Bcf. That was the smallest injection yet seen for the week, justifying the rally it precipitated. The year-on-year surplus fell 32 Bcf to 840 Bcf, or 48.4%, while the surplus to the five-year average was cut by 51 Bcf to 857 Bcf, or 49.9%.

Analyst Stephen Schork noted that storage would normally have risen 235 Bcf by this point, while 104 Bcf has been injected.

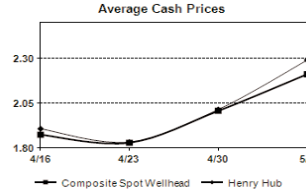
“With this in mind, we have switched our daily and weekly natty biases to bullish,” he said.

Canaccord Genuity is also somewhat more bullish at this point in light of its storage models that indicate the market is 2 Bcf/d under supplied.

Meanwhile, Baker Hughes reported that natural gas-focused rigs fell seven last week in the lower 48 states, bringing the count to 606. Oil-focused rigs rose by 27 to 1,355.

The June gas contract ended Friday’s session down 6.1¢ at \$2.279/MMBtu, gaining 9.3¢ for the week. June crude plunged \$4.05 Friday to \$98.49/bbl, falling \$6.44 for the week. Crude was weaker on a combination of a stronger dollar, disappointing job growth, a diminishing domestic demand outlook and a

(continued on page 4)



INTRASTATE WEEKLY SPOT PRICES							
Flow Dates: 5/1-5/7							
Price Point	\$/MMBtu	Chg.	High	Low	Avg. Daily Vol.	Avg. Daily Deals	May Bid Week
Louisiana Intras	2.313	0.237	2.42	2.20	42,023	2	—
Oklahoma Intras	2.129	0.173	2.19	2.02	16,686	3	1.86
South Texas Intras	2.230	0.265	2.32	2.05	26,201	3	—
West Texas Intras	—	—	—	—	—	—	—

(continued from page 3)

growing lack of confidence in the global economy.

Friday's Commodity Futures Trading Commission's Commitment of Traders report for the week ended May 1 showed noncommercials in about 59.5% short futures only positions for the week.

**Tom Haywood and Lisa Lawson, Houston**

## BSEE Head Outlines New E&P Regs, Quick Action Putting Safety First

The new head of the federal Bureau of Safety and Environmental Enforcement laid out his plan for the agency before a packed room at last week's Offshore Technology Conference 2012 in Houston.

With precision and ease, Director James Watson laid out an ambitious agenda that calls for developing new rules and regulations quickly, beefing up BSEE's staff and updating some regulations for production that haven't been updated since 1988.

The former Coast Guard admiral also gave the industry notice. While he and BSEE will work with the E&P industry, when it comes to enforcement or civil penalties, this isn't the old Minerals Management Service that was retooled and split into three separate organizations after the 2010 Macondo disaster.

"While BSEE's predecessor organization chose not to exercise its authority to hold contractors accountable for their actions, we will enforce regulations in every case, and will issue INCs or civil penalties as appropriate," Watson said. "We will do this in a measured and consistent way, and with consideration to all the factors contributing to the violation, but we will not turn away from exercising our full authority."

Watson said the agency is quickly ramping up its staff by hiring dozens to fill key positions as well as pushing new directives such as two-person inspections of offshore rigs and platforms.

Over the past two years, the bureau has hired 28 engineers and 46 inspectors, and it plans to bring on an additional 200 people to review drilling applications and spill response plans, inspect offshore facilities and ensure compliance with environmental regulations.

BSEE's recruiting drive has been helped by the OK to pay employees in fields such as petroleum engineering, up to 25% above federal pay scales.

The BSEE is working on a draft rule to improve the design, manufacture and repair of blowout preventers — a crucial last line of defense if an operator loses control over a well, but one which failed in the fatal blowout at BP's Macondo well.

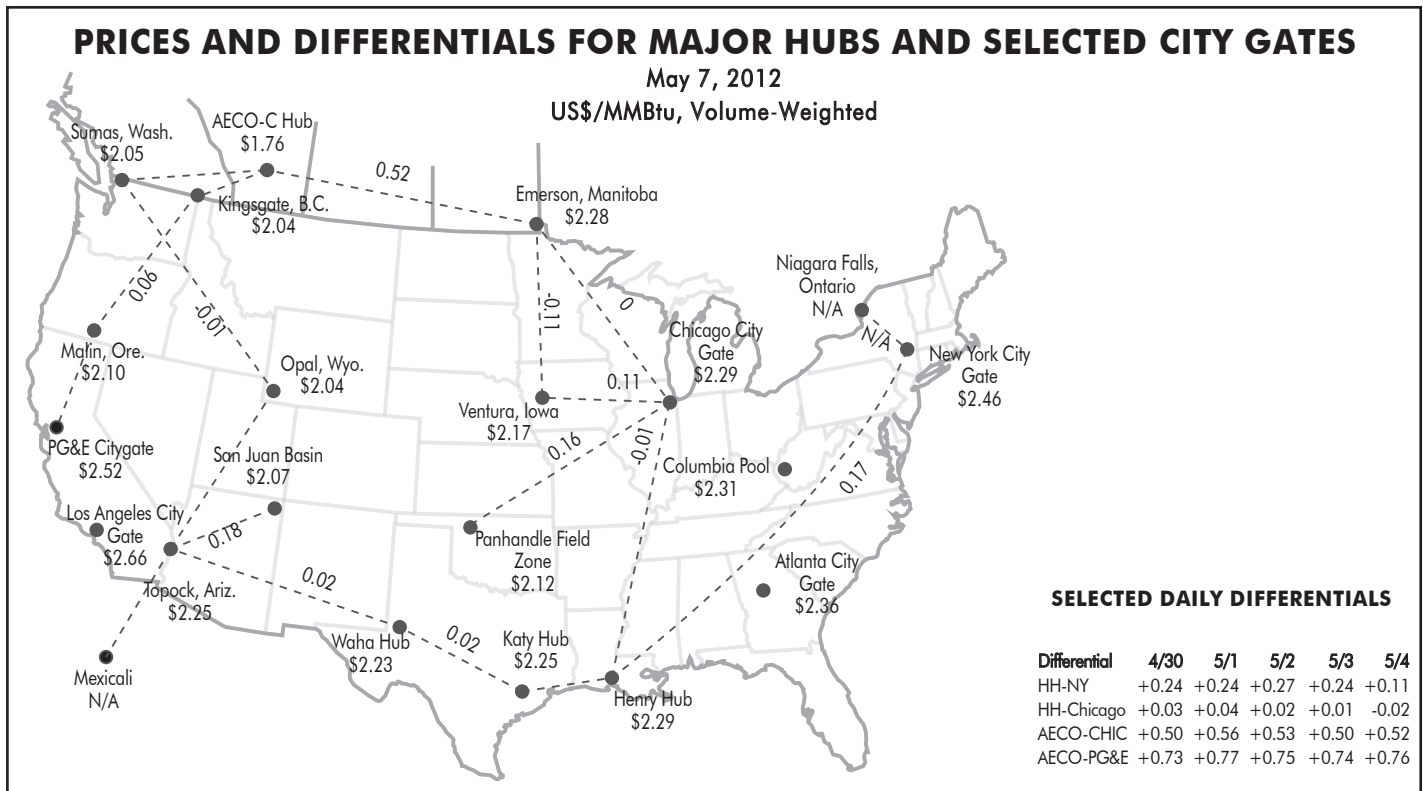
As part of the process, the agency will host an all-day public forum on blowout preventers in Washington on May 22 that will include the industry, government and academia.

Two major rules were issued in late 2010 in reaction to the Macondo disaster, Watson said

The Drilling Safety Rule, issued as an emergency rule, implemented higher standards for well design, casing and cementing practices and blowout preventers, while the Workplace Safety Rule set performance-based standards, requiring companies to implement and maintain safety and environmental management programs.

"We also took other steps, such as reinvigorating our review of oil spill response plans and looking for the availability of containment equipment while reviewing permit applications," he said. "All of these steps are designed to ensure that the industry achieves a higher level of safety, and an enhanced ability to respond in case the worst occurs."

Meanwhile, BSEE is writing a draft rule that aims to up-  
(continued on page 5)



## BSEE ...

(continued from page 4)

date oil and gas production safety system regulations that had their last major revision in 1988.

Watson said the industry has responded positively to the changes.

“Production has moved into deeper and deeper water, and regulations have simply not kept pace with technological advances,” Watson said. The new regulations will be guided by a federal investigation on BP’s Atlantis platform and include mandates for broader life-cycle analysis of critical equipment.

“This is a performance-based system that includes design verification, quality assurance requirements, a failure reporting process to identify quality of design defects, repair and maintenance requirements and certification of equipment and personnel.”

After the forum, Watson told *Natural Gas Week* that he was encouraged to see the current level of activity in the Gulf of Mexico. According to federal records, including all deepwater permits, a total of 112 unique deepwater wells have been permitted since October 2010.

He added, though, that he is expecting some apprehension from the industry about the new rules.

“I think there will be some angst among the industry as we get these new rules in place,” he said. “I recognize that business needs to know what the rules are so they can make their investments. And that is what we are trying to do.”

Watson said he is “about safety, all the time. This industry, this nation, cannot afford another accident.”

**John A. Sullivan, Houston**

## On and Below the Sea, Even in Cyberspace, Safety Focus for OTC

The Macondo disaster was two years ago, but its memory was still very fresh on the minds of many attending the Offshore Technology Conference 2012 in Houston last week.

With the Apr. 20 anniversary just a couple of weeks ago, safety was the overriding theme among the exhibitors and those attending North America’s largest energy-related trade show.

“The offshore industry has always been very safety conscious, but something like the incident in the Gulf raises aware-

ness,” George Beatty, president of Valley Center, California-based Survival Systems International, told *Natural Gas Week*.

“What happened in the Gulf two years ago, I believe, has caused the industry to become ultra-conscious about safety — and safety on all levels.”

Beatty’s company had one of its lifeboat on display. The emergency vessel can carry 60 passengers, is motorized and has a unique system on the outside that sprays water over the craft in the event it is near a fire.

The company’s system uses a single cable with a single hook.

“Most escape systems use twin hooks — one at the front and one at the stern — which increases the chance of something going wrong. A single cable and hook reduces that,” Beatty said, adding that he would like to see a greater emphasis on continued training of safety systems like his company’s emergency craft.

“I think that overall, the industry will continue to enhance safety issues for those working offshore.”

Across the exhibition hall — one of several at the OTC — Scott Malo demonstrated a system that takes workers into a cyber reality to learn about safety offshore.

Malo, a product development director with Lafayette, Louisiana-based Louisiana Immersive Technologies Enterprise, said they have taken a page from video game systems and put it to work in the safety world.

Anyone familiar with virtual reality games would recognize the system, but instead of matching wits with brain-eating zombies or really mean aliens, the person’s avatar must now learn how to get around a drilling rig in the event of an emergency.

“The user moves from the starting point to their emergency evacuation point or station,” Malo told *NGW* on the sidelines of the OTC. “If this were a video game, you would be the shooter and gunning for zombies or what have you. Here, though, you are learning out to react to an emergency.”

He said systems like this will allow companies to begin training new employees before they set foot on an offshore drilling rig.

“If you make a mistake, the program allows you to see where you went wrong,” Malo said. The virtual world, he said, allows someone to make a mistake and live.

Safety below the water was also in evidence at OTC as GE Oil & Gas unveiled next-generation well-control technology.

(continued on page 6)

### COMPOSITE SPOT WELLHEAD PRICE

January 2008 to Present  
(\$/MMBtu)

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Year
2012	2.65	2.48	2.11	1.92									
2011	4.42	4.23	3.93	4.15	4.25	4.51	4.38	4.04	3.84	3.46	3.21	3.18	3.86
2010	5.85	5.31	4.28	3.94	4.05	4.66	4.53	4.21	3.81	3.39	3.64	4.24	4.37
2009	4.96	4.22	3.64	3.32	3.58	3.57	3.30	3.12	2.86	3.93	3.57	5.27	3.76
2008	7.83	8.30	9.03	9.86	10.47	11.97	10.81	7.83	6.75	5.87	6.01	5.61	8.56

### COMPOSITE SPOT DELIVERED-TO-PIPELINE PRICE

January 2008 to Present  
(\$/MMBtu)

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Year
2012	3.19	2.77	2.29	2.05									
2011	5.82	4.70	4.25	4.34	4.39	4.66	4.64	4.15	3.99	3.60	3.38	3.39	4.11
2010	6.41	5.71	4.40	4.05	4.14	4.76	4.68	4.34	3.93	3.51	3.90	5.60	4.62
2009	5.84	4.53	3.89	3.56	3.69	3.65	3.36	3.21	2.96	4.09	3.74	5.70	4.03
2008	8.58	8.71	9.40	10.09	10.87	12.41	11.12	7.98	6.89	6.27	6.31	5.99	8.88

## OTC ...

(continued from page 5)

GE's new Blind Shear Ram is designed for use in the company's 18-3/4 inch ram blowout preventers (BOP). The Blind Shear Ram has the ability to both shear and seal after cutting 6-5/8 inch tool joints, which are heavy coupling elements for a drill pipe.

A forensic examination of the BOP in use on the Macondo well showed that the shears could not cut through a joint allowing a section of pipe to become lodged in the equipment.

GE said its shearing capability was confirmed during testing witnessed by representatives from several leading oil companies. The rams were successfully tested to 15,000 psi after cutting the tool joint.

"Our new Blind Shear Rams are designed to centralize, shear and seal after cutting tubulars up to and including 6-5/8 inch drill pipe tool joints in the BOP," said Sam Aquillano, GE Oil & Gas vice president of drilling and surface. "We are continuing testing to understand the full upper limits of what the new blind shear ram designs can achieve."

The company also introduced a new BOP stack with an interchangeable lower marine rise package and lower stack frames.

Aquillano said that traditionally, the lower marine rise package and lower stack have been fabricated as a custom-fit pair for a rig. As a result, to address an operational or maintenance issue on the rig, a drilling system would have to be retrieved to the surface, repaired and then returned to the seabed. This process can take days to accomplish and interrupts operations.

He added that to overcome this problem, GE's engineering team devised a new BOP stacking solution that allows rigs with two BOPs to use a lower marine rise package with either lower stack frame, greatly enhancing operator flexibility. The new system also gives operators the option of having a fleet spare that can interface with other systems.

Beatty said that while safety on the sea has long been important to the industry, Macondo has given "everyone something to think about. Safety has always been a very important item for anyone working offshore, but now, I think people are rethinking their safety programs to make sure they haven't left anything out."

**John A. Sullivan, Houston**

## Innovative Process Turning Gas To Ethanol to Be Tried in Texas

In the search for green transportation fuels, one word that has been around is ethanol.

Ethanol is a fuel additive that is now constitutes up to 10% of most gasoline blends, with some areas offering up to 85% blends, which can be used in the 8.5 million flex fuel vehicles on US highways today.

How it is made, though, is what causes the greatest disagreement since the conventional method is to use corn or sugarcane as the key feedstock.

The use of corn, according to some critics, has helped raise the price of feed which resulted in higher prices for meat, poultry and even some breads. The use of sugarcane, those same critics have said, has helped push up the cost of sugar.

Critics also point out that arable land is becoming scarce with residential development fighting agriculture and it makes little business sense to take more land away from producing food to produce corn for ethanol.

Now, Dallas-based Celanese has stepped into the melee with what it refers to as its TCX Technology — a process that creates a form of ethanol by using either natural gas, coal or pet coke, rather than corn or sugarcane.

One the sidelines of the recently held IHS CeraWeek 2012 conference in Houston, John Fotheringham, general manager of Celanese Advanced Fuel Technologies, talked to *Natural Gas Week* about the company and its process of taking corn out of the picture as a feedstock and, instead, using natural gas.

"Our process is feedstock flexible, has lower water consumption, is energy efficient and helps meet global energy challenges," Fotheringham said. While getting a lot of 21st century attention, the origins of this technology date back to 1943 when Celanese began its acetyl business.

Today, Celanese is pushing its TCX Technology production with plans to retrofit a facility in Nanjing, China. Plans are to construct one to two greenfield industrial ethanol complexes in China with an annual production capacity of 1 million metric tons.

The Chinese units would use coal — an abundant fuel source in that country.

(continued on page 7)

Trading Dates: April 30 - May 4		NATURAL GAS FUTURES										
NEW YORK MERCANTILE EXCHANGE (NYMEX) (HENRY HUB)												
	Monday		Tuesday		Wednesday		Thursday		Friday		Week's High-Low	Open Interest
	Last	Volume	Last	Volume	Last	Volume	Last	Volume	Last	Volume		
Jun 2012	2.285	147,097	2.371	70,875	2.253	110,060	2.340	82,890	2.279	—	2.385-2.150	127,780
Jul 2012	2.394	49,234	2.468	28,692	2.354	30,052	2.430	27,953	2.371	—	2.482-2.258	40,406
Aug 2012	2.462	29,521	2.532	14,357	2.426	17,187	2.495	16,697	2.439	—	2.544-2.332	32,213
Sep 2012	2.509	34,882	2.576	11,791	2.475	13,380	2.543	14,202	2.490	—	2.587-2.379	27,356
Oct 2012	2.600	34,099	2.660	14,967	2.565	19,398	2.632	15,398	2.578	—	2.675-2.473	22,336
Nov 2012	2.852	13,088	2.903	4,082	2.817	8,018	2.890	4,506	2.840	—	2.930-2.736	7,456
Dec 2012	3.182	9,978	3.228	3,349	3.148	4,992	3.224	3,931	3.182	—	3.265-3.073	5,533
Jan 2013	3.337	17,430	3.378	5,053	3.307	6,498	3.381	5,462	3.341	—	3.420-3.235	8,797
Feb 2013	3.349	2,531	3.392	810	3.321	771	3.395	957	3.354	—	3.433-3.247	1,505
Mar 2013	3.326	4,396	3.372	1,754	3.305	1,646	3.380	1,399	3.342	—	3.401-3.231	2,520
Apr 2013	3.303	10,786	3.354	2,909	3.290	4,168	3.366	3,028	3.328	—	3.401-3.213	5,287
May 2013	3.342	645	3.392	484	3.330	455	3.404	334	3.367	—	3.438-3.257	663
<b>12-MONTH STRIP</b>	<b>2.912</b>		<b>2.969</b>		<b>2.883</b>		<b>2.957</b>		<b>2.909</b>			
<b>TOTAL VOLUME</b>		<b>143,941</b>		<b>360,554</b>		<b>160,931</b>		<b>218,604</b>		<b>—</b>		

## Innovative ...

(continued from page 6)

Celanese also intends to build an ethanol production unit at its Clear Lake, Texas, facility for either internal use or merchant demand. The unit also will support continuing technology development efforts over the next several years.

Following approvals, construction of the unit is anticipated to begin in mid-2011 and to be completed by the end of 2012. The Clear Lake facility would utilize natural gas as its primary raw material.

"Natural gas is plentiful and prices are very low now and, according to most reports, will stay that way for a while," Fotheringham said. In the US, natural gas prices are hitting historic low prices at the same time more gas is being pumped into the system as new shale plays come into production.

Fotheringham said the Celanese process has some more advantages working in its favor: low cost, high octane, non-toxic and resource efficient. The advantages are evident when the Celanese process is compared with bio-ethanol which is: high octane and non-toxic; but very high cost; diverts food to fuel; and requires high levels of government support to keep it propped up.

"In the US, this fills a need for a secure energy source," Fotheringham said. "We need a transportation fuel that doesn't come from sources outside the US that may not be the friendliest nations around."

The same can be said for China, he said — which because of US regulations may be the company's best market. US regulations continue to block widespread development.

According to a Celanese fact-sheet, demand for industrial ethanol in China is expected to grow 8% to 10% per year resulting in estimated 2015 volumes of 4.5 million tons (a 1.5 million ton increase over 2010).

Fotheringham said this rate of growth is expected to continue through at least the next decade as a Chinese middle class continues to develop and the forecast is consistent with the long-term growth rates for the products that use ethanol in their manufacturing processes.

"We have some critically important dates coming up for us as we see 2013 as the year we really penetrate the Chinese market," Fotheringham said. "China, like the US, has an abundant fuel source that we can use.

"In the US, it is natural gas, while in China our process can

use coal — and China has tremendous coal supplies."

He added that despite all of the good points for TXC Technology, "It is not a silver bullet. It is just one aspect of a whole energy policy that includes using what you have the most of for transportation fuel and at the same time, cutting down the amount of oil the US gets from other countries.

"One of the key advantages that we have to offer is that the US and China both need affordable fuels," Fotheringham said. "We have that right here."

**John A. Sullivan, Houston**

## LNG to Become Fuel of Choice for Global Offshore Service Industry

The shale gale has reached the offshore service industry and its impact will be felt for years to come as natural gas takes an ever greater role in transporting goods and personnel.

There are five drivers pushing the offshore support industry to begin using natural gas in the form of LNG as a transportation fuel, said John Hatley with Wartsila North America during a panel presentation at last week's Offshore Technology Conference 2012 held in Houston.

"We are watching the start of a new marine era for gas," Hatley said. "We are seeing a dramatic shift going forward and it is thanks to the abundance of natural gas that we now have, thanks in no small part to the shale developments in the US."

Hatley said the five drivers are availability and affordability followed by three dealing with US Environmental Protection Agency mandates: sulfur content reduction, emission control areas and engine emissions.

"We have a sustainable shift to gas with huge resources — nearly a century's worth by some estimations," Hatley said. The explosion of production from shale plays, such as the Haynesville, Barnett, Marcellus and Utica, have helped push the offshore marine support industry into looking at LNG as a substitute fuel over diesel.

"An ample supply equals reduced prices, which strengthens the business case for LNG," Hatley said. He said that several federal mandates are about to go into effect, further pushing the industry into using LNG over diesel or fuels with higher sulfur contents.

The emissions control area is a zone 200 miles off the coast

(continued on page 8)

### NORTH AMERICAN WEEKLY GAS STORAGE

(Billion Cubic Feet)

Region	Apr. 27 Week	Apr. 20 Week	Weekly Change	Year Ago	Yr. Ago Change	5-Year Average	5-Year Change
<b>US</b>							
East	1165	1145	20	707	458	769	396
West	371	362	9	233	138	271	100
Producing	1040	1041	-1	817	223	730	310
<b>Total Lower 48</b>	<b>2576</b>	<b>2548</b>	<b>28</b>	<b>1757</b>	<b>819</b>	<b>1771</b>	<b>805</b>
<b>Canada</b>							
East	139	142	-3	60	79	70	68
West	362	356	6	160	202	151	211
<b>Total Canada</b>	<b>500</b>	<b>498</b>	<b>3</b>	<b>220</b>	<b>281</b>	<b>221</b>	<b>279</b>
<b>Total North American</b>	<b>3076</b>	<b>3046</b>	<b>31</b>	<b>1977</b>	<b>1100</b>	<b>1992</b>	<b>1084</b>

Sources: Energy Information Administration; Canadian Enerdata.

## NATURAL GAS BIDWEEK PRICES

Flow Dates: 5/1-5/31

Price Point	May Avg. \$/MMBtu	Chg. from Prev.	High	Low	Vol.	Deals	Prev. Bid-Week
<b>GULF COAST</b>							
ANR SE	1.99	-0.10	1.99	1.99	40,000	5	2.08
Col. Gulf - Erath	1.99	-0.15	1.99	1.98	27,500	3	2.13
Col. Gulf - Rayne	1.98	-0.14	2.16	1.94	306,495	40	2.12
Florida Zone 1	—	—	—	—	—	—	—
Florida Zone 2	2.04	-0.15	2.06	2.04	34,256	6	2.19
Florida Zone 3	2.20	-0.16	2.21	2.20	51,200	6	2.36
Henry Hub	2.03	-0.17	2.03	1.98	257,500	9	2.19
NGPL-LA	—	—	—	—	—	—	—
Sonat	2.02	-0.14	2.09	2.01	80,735	10	2.16
Tenn 500 So LA Z1	2.01	-0.14	2.20	2.01	26,327	10	2.15
Tenn 800 So LA Z1	1.98	-0.15	2.09	1.91	121,100	13	2.13
Tetco ELA	1.99	-0.14	2.00	1.99	22,176	5	2.13
Tetco WLA	2.02	-0.11	2.02	2.02	400	1	2.13
TGT Zone SL	1.98	-0.17	1.98	1.98	10,000	1	2.14
Transco Station 45	2.04	—	2.13	2.01	24,900	3	—
Transco Station 65	2.04	-0.13	2.13	2.02	86,579	15	2.17
Trunkline ELA	2.00	-0.13	2.03	1.99	5,700	2	2.12
Trunkline WLA	2.01	-0.13	2.01	2.01	25,000	1	2.14
Trunkline Zone 1A	1.98	-0.14	2.00	1.98	35,732	13	2.12
Regional Average	2.01	-0.16	—	—	—	—	2.17
<b>TEXAS (SOUTH/EAST)</b>							
Carthage Hub	—	—	—	—	—	—	—
HSC	1.96	-0.16	1.98	1.96	45,053	6	2.13
Katy Hub	1.93	-0.19	2.03	1.90	115,040	12	2.12
NGPL-South Texas	1.96	-0.13	1.96	1.96	50,000	4	2.09
NGPL-TexOk	1.97	-0.08	2.09	1.91	231,249	50	2.06
Tenn Zone 0	1.95	-0.14	2.07	1.88	245,501	29	2.10
Tetco-East Texas	—	—	—	—	—	—	2.07
Tetco-South Texas	2.02	—	2.04	1.98	3,700	2	—
TGT Zone 1	1.99	-0.08	2.08	1.97	130,407	19	2.06
Transco Station 30	2.03	-0.08	2.13	1.97	41,900	7	2.11
Regional Average	1.97	-0.13	—	—	—	—	2.09
<b>TEXAS (WEST)</b>							
El Paso Permian	1.92	-0.08	2.01	1.85	241,500	37	2.00
NNG Custer	—	—	—	—	—	—	—
Transwes E of Thoreau	—	—	—	—	—	—	1.94
Waha Hub	1.90	-0.16	1.90	1.90	5,000	1	2.06
Regional Average	1.92	-0.08	—	—	—	—	2.00
<b>MIDCONTINENT</b>							
ANR SW	1.85	-0.11	1.89	1.83	50,800	11	1.97
CenterPoint East	1.94	-0.07	2.02	1.85	47,086	15	2.01
CenterPoint West	—	—	—	—	—	—	—
NGPL-MC	1.87	-0.10	2.01	1.83	120,709	26	1.97
Oneok	1.86	-0.10	1.90	1.84	17,000	4	1.96
Panhandle	1.88	-0.07	1.99	1.82	279,999	53	1.95
Southern Star	1.80	-0.06	1.82	1.79	34,000	6	1.87
Regional Average	1.88	-0.08	—	—	—	—	1.96
<b>GREAT PLAINS</b>							
Emerson	2.10	-0.08	2.17	2.07	29,261	8	2.18
NB Ventura TP	1.99	-0.02	2.05	1.94	20,044	8	2.01
NNG Demarc	1.97	-0.04	2.01	1.94	113,899	26	2.01
NNG Ventura	1.97	-0.06	2.09	1.94	100,755	25	2.03
Regional Average	1.98	-0.06	—	—	—	—	2.05
<b>UPPER MIDWEST</b>							
Alliance	2.10	-0.09	2.10	2.10	15,000	2	2.19
ANR ML7	2.25	-0.18	2.36	2.20	9,265	11	2.43
Chicago Citygate	2.09	-0.07	2.19	2.02	209,307	47	2.16
Consumers	2.19	-0.12	2.30	2.15	149,640	40	2.31
MichCon	2.17	-0.15	2.30	2.15	227,107	52	2.32
Regional Average	2.15	-0.09	—	—	—	—	2.24
<b>SOUTHEAST</b>							
Tetco M1	1.99	-0.13	2.03	1.99	44,634	16	2.13
Transco Zone 4	2.04	-0.13	2.13	1.97	269,686	30	2.17

(continued on p.9)

## Offshore ...

(continued from page 7)

of the US that will see marine vessels regulated by strict EPA regulations. The law went into effect in August 2011 and will become enforceable in August of this year.

“Tightened sulfur limits stresses supply and helps boost traditional diesel fuel costs,” Hatley said. “By mid-decade, you will see a paradigm shift to natural gas and LNG as the fuel of choice.”

The offshore support industry is no longer confined to coastal waters, but is following the E&P industry into the deeper waters and frontier regions, said Mike Sano with ABS. He said today’s offshore vessels can be as long as 300 feet with 50,000 hp engines.

There are 9,000 offshore supply vessels in operation around the world with the vast majority of them in classes such as anchor handling, towing and supply. The growth in deepwater drilling in the Gulf of Mexico and around the world has helped spur the development of larger offshore support vessels — and with it, a search for a cheaper fuel.

“I think what we are seeing in the future for this industry are more complex vessels using LNG as a fuel,” Sano said.

Timothy Meyers, a civilian with the US Coast Guard in Washington, D.C., said that the shift to LNG-powered vessels is already happening. He pointed out that Harvey Gulf is ready to receive a LNG-fueled offshore support vessel and ferries in Washington State and the Long Island Ferry are being powered by LNG.

There is a tradeoff, though, as the vessels have to be built with larger storage tanks for the LNG as well as cooling systems that they don’t normally have now. There is also the question of onshore support facilities — with many of the vessels now powered by LNG having to get their fuel trucked in and fueled up at dockside.

There is also the issue of crew training in dealing with LNG-powered systems.

He said a recent study of two vessels — one powered by diesel fuel and the other by LNG — showed the overall yearly operating costs for the first year were more for the LNG vessel. However, those costs were easily recouped by the overall cost differences between diesel and LNG.

“By mid-decade, I think you will see the ones who haven’t shifted to LNG as their fuel very quickly trying to catch up to those that did,” Hatley said. “LNG as a fuel just makes good economic sense. This is something that, I believe, will continue to grow.”

John A. Sullivan, Houston

## Labor Hurdles Raised For Gas E&P; Group Forms for Better Standards

Federal officials shed additional light last week on their efforts to study and prepare recommendations for regulating various aspects of unconventional natural gas development — including plans to explore the on-the-job ramifications faced by workers exposed to various stages of the drilling, completion and transport process.

Representatives from the National Institute for Occupational Safety and Health (NIOSH), a part of the Centers for Disease Control and Prevention (CDC), said the institute has al-

(continued on page 9)



## NATURAL GAS BIDWEEK PRICES (cont.)

Flow Dates: 5/1-5/31

Price Point	May Avg. \$/MMBtu	Chg. from Prev.	High	Low	Vol.	Deals	Prev. Bid Week
Transco Zone 5	2.12	-0.17	2.58	2.03	30,326	9	2.29
Regional Average	2.04	-0.13					2.17
<b>APPALACHIA</b>							
Col. Gas App. Pool	2.07	-0.12	2.08	2.06	112,020	25	2.19
Dominion North	—	—	—	—	—	—	2.24
Dominion South	2.07	-0.12	2.56	2.07	444,643	53	2.20
Lebanon Hub	2.07	-0.12	2.07	2.07	116,602	18	2.19
Regional Average	2.07	-0.12					2.20
<b>EASTERN CANADA</b>							
Dawn	2.31	-0.13	2.41	2.12	369,377	60	2.44
Iroquois	2.42	-0.19	2.43	2.41	23,000	2	2.61
Niagara	—	—	—	—	—	—	2.62
Regional Average	2.32	-0.13					2.45
<b>NORTHEAST / MIDATLANTIC</b>							
Algonquin	2.32	-0.16	2.33	2.31	252,000	43	2.48
Dracut	—	—	—	—	—	—	—
Iroquois Zone 2	2.42	-0.18	2.45	2.41	2,651	3	2.61
Tenn Gas Zone 6	2.30	-0.20	2.33	2.14	15,400	6	2.50
Tetco M3	2.19	-0.14	2.23	2.18	174,717	24	2.33
Transco Z6 - Non-NY	2.14	-0.16	2.20	2.03	80,910	16	2.31
Transco Z6 - NY	2.20	-0.16	2.25	2.03	129,632	19	2.36
Regional Average	2.24	-0.17					2.41
<b>ROCKIES</b>							
Cheyenne Hub	1.83	-0.06	2.01	1.78	39,066	9	1.89
CIG	1.73	-0.12	1.75	1.72	37,175	6	1.85
Kern River / Opal	1.87	-0.07	1.97	1.82	428,610	54	1.94
NW Rockies	1.76	-0.08	1.88	1.71	211,319	23	1.84
Questar	1.75	-0.10	1.75	1.75	704	1	1.85
Regional Average	1.83	-0.06					1.89
<b>SAN JUAN BASIN</b>							
El Paso Bondad	1.79	-0.16	1.80	1.78	32,500	2	1.95
El Paso San Juan	1.85	-0.06	2.00	1.79	409,330	57	1.91
Regional Average	1.85	-0.06					1.91
<b>PACIFIC NORTHWEST/WESTERN CANADA</b>							
AECO	1.62	-0.06	1.77	1.51	1,119,816	170	1.68
Kingsgate	—	—	—	—	—	—	—
Malin	1.89	-0.15	1.97	1.86	60,353	16	2.03
NW Sumas	1.82	-0.13	1.91	1.72	271,126	49	1.95
Stanfield	—	—	—	—	—	—	—
Westcoast Station 2	1.48	-0.21	1.55	1.43	125,694	15	1.69
Regional Average	1.65	-0.07					1.72
<b>CALIFORNIA</b>							
Kern - Wheeler Ridge	2.11	-0.24	2.11	2.11	10,000	1	2.35
PG&E Citygate	2.38	-0.11	2.42	2.30	72,294	16	2.49
PG&E South	2.12	—	2.12	2.12	5,100	1	—
SoCal Border	2.16	-0.25	2.23	2.10	201,500	25	2.40
SoCal Citygate	2.27	-0.18	2.32	2.23	62,717	10	2.45
Regional Average	2.22	-0.20					2.42

### CITYGATE PRICES

Price Point	May Avg. \$/MMBtu	Chg. from Prev.	High	Low	Vol.	Deals	Prev. Bid Week
Austin, Texas	2.02	-0.16	—	—	—	—	2.18
Denver, Colorado	1.98	-0.12	—	—	—	—	2.10
Detroit, Michigan	2.24	-0.07	—	—	—	—	2.31
Los Angeles, Cali.	2.66	-0.25	—	—	—	—	2.90
Minneapolis, Minn.	2.07	-0.06	—	—	—	—	2.13
Nashville, Tenn.	2.02	-0.15	—	—	—	—	2.16
Philadelphia, Penn.	2.18	-0.16	—	—	—	—	2.34
Seattle, Washington	1.88	-0.13	—	—	—	—	2.01
Washington, DC	2.16	-0.16	—	—	—	—	2.32

## Standards ...

(continued from page 8)

ready uncovered some chemical hazards as it has conducted testing at 11 different natural gas development sites.

In particular, the institute said chemical risks include diesel particulates, silica, volatile organic compounds, hydrogen sulfide, acid gases, biocides and metals like lead.

The NIOSH said if it finds that the extent of these risks are serious in the coming months, it may end up “recommending safe work practices or proposing and evaluating exposure controls.”

Regulations could cover personal protective equipment for workers, engineering controls, or even substituting some techniques with safer ones, the institute’s Eric Esswein told the conference.

The institute has five current memorandums of understanding with producers and contractors to study operations across a total of five states. The data was presented at a conference in Washington hosted by the Institute of Medicine of the National Academies of Science.

Environmentalists were quick to point out the details unveiled at the gathering. James Meinert, a researcher for the Natural Resources Defense Council, drew attention to the NIOSH’s conclusion that workers were breathing in more silica than expected as part of the sand used to fracture natural gas wells.

More silica dust than recommended was present in 79% of samples taken of 116 workers.

“This is unacceptable,” Meinert said in a blog posting. “This is a known risk with known methods of prevention. The good news is workers were wearing appropriate face respirators, but even these respirators only protect up to 10 times the recommended limit.”

At the same gathering, the US Environmental Protection Agency said health and toxicology will be a key part of an ongoing study it is conducting on the risks of hydraulic fracturing — a probe mandated by Congress.

Jennifer Orme-Zavaleta, director of the EPA’s water research program, said the agency will be developing 10 to 20 chemical indicators that are most serious, which may be used to guide future federal regulations of workplace practices for natural gas development.

She said the indicators will be based on factors such as the frequency of possible exposure, the potency of the chemicals, the routes they take as they are transported through the various stages of development and the prevalence and effectiveness of detection methods for those chemicals.

The EPA study, which is mainly focusing on the risks of water pollution associated with gas development, is scheduled to be completed in 2014 (NGW Nov. 1’10).

Meanwhile, in an effort to demonstrate the industry’s voluntary efforts to improve safety and environmental protection, a group of 11 operators in the Appalachian Mountain region have teamed up to develop best practices for exploration and production.

The group said it intends to “enhance transparency and regulatory compliance” and “empower workers to stop work that is potentially unsafe.”

Its members are a diverse group of big and small names: Anadarko, Cabot, Chesapeake, Chevron, EQT, Seneca, Shell, Southwestern, Talisman, WPX and XTO.

(continued on page 10)

## Standards ...

(continued from page 9)

The consortium will report to existing national groups like the Interstate Oil and Gas Compact Commission and could play an important role as producers continue exploring and producing from the prolific Marcellus and Utica Shale formations.

**Lauren O'Neil, Washington**

## Chinese ...

(continued from page 1)

He said the firm's rigs offer three distinct advantages for the US market: a smaller operational footprint, cost savings and a more environmentally-friendly system.

The Honghua system requires less equipment so it takes up less space and can be deployed faster.

Mi said the automated rigs can simultaneously drill vertical  
(continued on page 11)

\$/MMBtu															
<b>NGW'S MONTHLY WEIGHTED AVERAGES</b>															
Price Point	Apr.'12	Mar.'12	Feb.'12	Jan.'12	Dec.'11	Nov.'11	Oct.'11	Sep.'11	Aug.'11	Jul.'11	Jun.'11	May.'11	Apr.'11	2012 Average	2011 Average
<b>Gulf Coast</b>															
ANR SE	1.91	2.15	2.50	2.58	3.12	3.16	3.50	3.81	4.00	4.36	4.49	4.20	4.19	2.27	3.90
Col. Gulf - Erath	1.91	2.15	2.50	2.68	3.15	3.21	3.50	3.91	4.02	4.39	4.55	4.27	4.19	2.19	4.00
Col. Gulf - Rayne	1.93	2.13	2.49	2.64	3.14	3.15	3.47	3.81	4.02	4.39	4.49	4.24	4.15	2.34	3.70
Florida Zone 1	2.29	--	2.66	2.93	3.05	3.38	3.50	3.85	4.16	4.41	4.62	4.17	4.28	2.70	4.11
Florida Zone 2	2.02	2.05	2.52	2.73	3.16	3.21	3.52	3.95	4.09	4.44	4.52	4.30	4.25	2.15	3.95
Florida Zone 3	2.23	2.36	2.56	2.69	3.23	3.25	3.57	4.09	4.20	4.43	4.61	4.32	4.38	2.51	3.99
Henry Hub	1.92	2.20	2.58	2.71	3.15	3.26	3.56	3.89	4.08	4.43	4.55	4.33	4.23	2.33	3.94
NGPL-LA	--	--	--	--	--	--	--	--	--	--	--	--	4.28	--	3.94
Sonat	1.94	2.15	2.52	2.72	3.13	3.18	3.51	3.89	4.04	4.36	4.52	4.25	4.20	2.25	3.82
Tenn 500 So LA Z1	1.94	2.14	2.54	2.71	3.18	3.19	3.51	3.88	4.04	4.38	4.53	4.28	4.15	2.38	3.85
Tenn 800 So LA Z1	1.92	2.13	2.52	2.65	3.16	3.21	3.52	3.87	4.04	4.39	4.49	4.22	4.15	2.31	3.87
Tetco ELA	1.93	2.13	2.52	2.70	3.20	3.10	3.44	3.80	4.05	4.38	4.51	4.30	4.20	2.26	3.76
Tetco WLA	1.94	2.09	2.51	2.73	3.20	3.14	3.50	3.88	4.03	4.39	4.54	4.19	4.19	2.30	3.95
TGT Zone SL	1.91	2.12	2.53	2.62	3.13	3.08	3.49	3.88	4.00	4.34	4.49	4.24	4.12	2.16	3.91
Transco Station 45	1.89	2.08	2.47	2.75	3.20	3.25	3.47	3.87	4.11	4.35	4.52	4.19	4.21	2.28	4.09
Transco Station 65	1.95	2.21	2.50	2.69	3.21	3.13	3.52	3.92	4.10	4.43	4.57	4.31	4.23	2.39	3.99
Trunkline ELA	1.91	2.10	2.45	2.69	3.15	3.11	3.47	3.81	4.02	4.29	4.44	4.23	4.15	2.29	3.88
Trunkline WLA	1.92	2.13	2.51	2.75	3.20	3.29	3.56	3.84	4.08	4.49	4.59	4.34	4.20	2.25	4.02
Trunkline Zone 1A	1.93	2.14	2.50	2.60	3.16	3.08	3.48	3.79	4.02	4.38	4.52	4.20	4.14	2.29	3.86
<b>Texas (South/East)</b>															
Carthage Hub	1.92	2.16	2.47	2.66	3.06	3.06	3.40	3.75	3.92	4.28	4.31	4.14	4.06	2.35	3.70
HSC	1.89	2.08	2.52	2.67	3.16	3.12	3.44	3.85	4.04	4.38	4.57	4.18	4.19	2.27	3.88
Katy Hub	1.92	2.10	2.49	2.67	3.15	3.13	3.47	3.87	4.03	4.39	4.54	4.26	4.19	2.23	3.75
NGPL-South Texas	1.91	2.11	2.42	2.62	3.23	3.20	3.47	3.86	4.02	4.35	4.43	4.18	4.14	2.22	3.93
NGPL-TeXOk	1.92	2.08	2.48	2.60	3.16	3.13	3.48	3.85	4.01	4.34	4.44	4.18	4.17	2.26	3.84
Tenn Zone 0	1.90	2.07	2.48	2.66	3.11	3.08	3.44	3.80	4.01	4.37	4.53	4.20	4.15	2.24	3.72
Tetco-East Texas	1.94	2.04	2.48	2.75	3.05	3.21	3.38	3.65	3.88	4.21	4.43	4.24	4.08	2.12	3.95
Tetco-South Texas	1.91	2.12	2.48	2.54	3.06	3.20	3.38	3.77	4.00	4.27	4.54	4.14	4.08	2.27	3.95
TGT Zone 1	1.92	2.10	2.49	2.66	3.16	3.21	3.45	3.82	4.01	4.35	4.50	4.20	4.15	2.19	3.88
Transco Station 30	1.90	2.08	2.44	2.68	3.14	3.02	3.45	3.80	4.03	4.31	4.55	4.20	4.17	2.23	3.76
<b>Texas (West)</b>															
El Paso Permian	1.85	2.05	2.48	2.57	3.16	3.06	3.33	3.74	4.01	4.28	4.43	4.09	4.02	2.32	3.64
Transwes E of Thoreau	1.93	2.10	2.47	2.62	3.15	3.24	3.32	3.78	3.87	4.14	4.33	4.08	4.01	2.31	3.97
Waha Hub	1.89	2.14	2.47	2.60	3.19	3.15	3.37	3.84	4.01	4.30	4.44	4.15	4.11	2.24	3.76
<b>Midcontinent</b>															
ANR SW	1.88	2.09	2.45	2.65	3.19	3.03	3.34	3.76	3.95	4.30	4.39	4.14	4.00	2.15	3.82
CenterPoint East	1.90	2.05	2.43	2.61	3.10	3.03	3.34	3.71	3.94	4.33	4.39	4.15	4.06	2.22	3.81
CenterPoint West	1.91	2.01	2.41	2.61	3.04	3.11	3.36	3.74	3.93	4.26	4.47	4.17	3.98	2.14	3.86
NGPL-MC	1.86	2.02	2.47	2.61	3.05	3.04	3.42	3.81	3.97	4.28	4.45	4.14	4.04	2.24	3.61
Oneok	1.92	2.07	2.48	2.46	3.21	3.05	3.32	3.95	4.01	4.31	4.48	4.14	4.02	2.25	3.86
Panhandle	1.85	1.97	2.44	2.58	3.12	3.03	3.37	3.82	3.95	4.23	4.42	4.14	4.00	2.25	3.72
Southern Star	1.86	1.98	2.44	2.63	3.15	3.00	3.29	3.81	3.96	4.33	4.51	4.16	4.08	2.19	3.64
<b>Great Plains</b>															
Emerson	2.04	2.22	2.76	2.93	3.35	3.45	3.48	3.82	3.94	4.25	4.44	4.28	4.14	2.56	3.79
NB Ventura TP	1.94	2.06	2.57	2.80	3.17	3.25	3.51	3.90	4.03	4.36	4.47	4.27	4.26	2.31	3.78
NNG Demarc	1.96	2.12	2.56	2.77	3.15	3.35	3.62	3.93	4.10	4.39	4.51	4.23	4.22	2.37	3.89
NNG Ventura	1.95	2.05	2.54	2.79	3.21	3.37	3.55	3.94	4.09	4.40	4.53	4.27	4.21	2.42	3.85
<b>Upper Midwest</b>															
Alliance	2.03	2.11	2.69	2.77	3.43	3.47	3.54	3.98	4.14	4.47	4.65	4.34	4.33	2.22	4.18
ANR ML7	2.20	2.22	2.64	2.73	3.48	3.65	3.78	4.20	4.28	4.58	4.87	4.42	4.52	2.51	4.20
Chicago Citygate	2.04	2.22	2.68	2.78	3.26	3.40	3.67	3.97	4.13	4.46	4.59	4.36	4.37	2.46	3.88
Consumers	2.17	2.32	2.70	2.90	3.33	3.33	3.70	4.14	4.23	4.57	4.74	4.46	4.46	2.49	4.00
MichCon	2.13	2.33	2.73	2.88	3.37	3.52	3.74	4.14	4.23	4.49	4.73	4.50	4.46	2.42	4.16

# Chinese ...

(continued from page 10)

and horizontal sections. Honghua's system also provides a 6,000-hp pump for hydraulic fracturing operations and three dual-pump fracturing trucks that can reach the same capacity generated by 20 trucks in a conventional operation.

Additionally, six of Honghua's flexible water tanks can satisfy fracturing operations that would generally require 30 conventional tanks — reducing the amount of fresh wa-

ter needed, as well as cutting back the number of heavy trucks that would be required to bring in water.

Fresh water use and having to truck it to the well site have become divisive issues in emerging shale plays in such states such as Ohio, Pennsylvania and New York. The number of heavy trucks supporting drilling operations was also a touchy subject in North Louisiana as a number of parishes tried to balance the upswing in drilling and the damage to rural roads and highways (NGW Jul.11'11).

(continued on page 18)

\$/MMBtu		NGW'S MONTHLY WEIGHTED AVERAGES (CONT.)														2012	2011
Price Point	Apr.'12	Mar.'12	Feb.'12	Jan.'12	Dec.'11	Nov.'11	Oct.'11	Sep.'11	Aug.'11	Jul.'11	Jun.'11	May.'11	Apr.'11	Average	Average		
<b>Southeast</b>																	
Tetco M1	1.99	2.18	2.52	2.72	3.18	3.13	3.53	3.86	4.06	4.49	4.57	4.29	4.23	2.46	3.92		
Transco Zone 4	1.96	2.18	2.53	2.69	3.19	3.17	3.52	3.91	4.10	4.42	4.58	4.31	4.24	2.35	3.86		
Transco Zone 5	2.09	2.32	2.84	3.06	3.40	3.35	3.72	4.06	4.44	4.75	4.88	4.80	4.60	2.71	4.82		
<b>Appalachia</b>																	
Col. Gas App. Pool	2.01	2.20	2.58	2.71	3.21	3.23	3.62	3.88	4.11	4.51	4.61	4.42	4.38	2.34	3.94		
Dominion North	2.18	2.26	2.58	2.66	3.09	3.18	3.66	4.20	4.55	4.81	4.61	4.63	4.54	2.26	4.09		
Dominion South	2.04	2.19	2.63	2.65	3.26	3.27	3.63	4.00	4.10	4.49	4.65	4.48	4.41	2.31	4.00		
Lebanon Hub	2.03	2.18	2.63	2.87	3.26	3.24	3.66	3.98	4.13	4.61	4.77	4.45	4.36	2.23	4.11		
<b>Eastern Canada</b>																	
Dawn	2.29	2.56	2.97	3.08	3.64	3.84	3.85	4.22	4.33	4.64	4.84	4.68	4.59	2.64	4.18		
Iroquois	2.44	2.86	3.57	4.31	4.00	3.99	4.02	4.35	4.52	5.07	5.09	4.84	4.83	3.17	4.44		
Niagara	2.30	2.59	2.99	3.23	3.71	3.88	3.90	4.28	4.49	5.00	5.12	4.87	4.88	3.05	4.38		
<b>Northeast / MidAtlantic</b>																	
Algonquin	2.40	2.77	3.69	5.57	4.07	3.91	3.95	4.17	4.40	5.16	4.98	4.64	4.70	3.50	4.58		
Dracut	2.69	3.33	3.75	6.28	4.23	4.19	4.31	4.49	4.67	5.37	5.37	5.13	4.77	5.05	5.44		
Iroquois Zone 2	2.47	3.05	3.44	5.44	4.00	4.03	4.13	4.33	4.54	5.76	5.12	4.84	4.84	3.52	4.96		
Tenn Gas Zone 6	2.35	2.86	3.61	5.38	4.15	4.02	3.98	4.21	4.36	5.24	4.85	4.73	4.73	3.64	4.83		
Tetco M3	2.15	2.33	2.89	3.50	3.48	3.37	3.77	4.09	4.30	4.68	4.82	4.58	4.52	2.77	4.35		
Transco Z6 - Non-NY	2.11	2.30	2.94	3.66	3.54	3.39	3.80	4.12	4.34	4.76	4.86	4.62	4.57	2.80	4.36		
Transco Z6 - NY	2.11	2.41	3.26	4.80	3.74	3.45	3.80	4.14	4.42	5.43	5.07	4.64	4.58	3.13	5.00		
<b>Rockies</b>																	
Cheyenne Hub	1.82	1.98	2.45	2.60	3.18	3.17	3.35	3.75	3.92	4.12	4.29	4.04	4.02	2.15	3.76		
CIG	1.81	2.01	2.44	2.55	3.15	2.96	3.35	3.69	3.82	4.05	4.25	4.01	4.01	2.13	3.55		
Kern River / Opal	1.88	2.07	2.54	2.68	3.14	3.26	3.35	3.78	3.85	4.10	4.26	4.00	3.93	2.26	3.61		
NW Rockies	1.84	2.02	2.47	2.62	3.06	3.10	3.32	3.72	3.83	4.01	4.30	3.97	4.01	2.18	3.52		
Questar	1.77	1.95	2.49	2.59	3.09	3.31	3.29	3.71	3.86	4.05	4.24	4.05	4.00	2.14	3.78		
<b>San Juan Basin</b>																	
El Paso Bondad	1.81	2.02	2.51	2.64	3.17	2.98	3.33	3.75	3.90	4.14	4.28	4.07	3.96	2.08	3.74		
El Paso San Juan	1.83	2.03	2.49	2.62	3.18	3.08	3.28	3.75	3.94	4.20	4.31	4.07	3.96	2.20	3.69		
<b>Pacific Northwest/Western Canada</b>																	
AECO	1.57	1.72	2.07	2.37	2.74	2.95	3.08	3.50	3.50	3.67	3.96	3.80	3.68	1.92	3.19		
Kingsgate	1.87	2.06	2.49	2.47	3.25	3.39	3.37	3.81	3.82	4.11	4.34	4.01	4.04	2.13	3.76		
Malin	1.95	2.16	2.61	2.83	3.32	3.32	3.36	3.85	3.93	4.25	4.46	4.20	4.15	2.41	3.66		
NW Sumas	1.81	2.13	2.65	2.89	3.51	3.61	3.38	3.74	3.79	3.98	4.25	4.02	4.01	2.37	3.80		
Stanfield	1.84	2.11	2.57	2.80	3.41	3.38	3.50	3.83	--	4.16	4.35	4.11	4.09	2.46	3.58		
Westcoast Station 2	1.53	1.75	2.04	2.24	2.74	2.87	2.74	3.13	3.09	3.30	3.75	3.54	3.24	1.86	3.16		
<b>California</b>																	
Kern - Wheeler Ridge	2.22	2.30	2.72	2.91	3.41	3.48	3.45	4.10	4.15	4.39	4.53	4.19	4.22	2.37	3.96		
PG&E Citygate	2.36	2.50	2.90	3.13	3.64	3.80	3.76	4.28	4.28	4.59	4.78	4.43	4.37	2.69	4.11		
PG&E South	2.20	2.27	2.78	2.91	3.40	3.34	3.53	4.10	4.14	4.38	4.47	4.21	4.22	2.57	3.88		
SoCal Border	2.21	2.28	2.75	2.93	3.50	3.39	3.55	4.12	4.17	4.42	4.58	4.25	4.23	2.47	3.94		
SoCal Citygate	2.32	2.44	2.86	3.01	3.55	3.65	3.65	4.21	4.18	4.43	4.55	4.24	4.23	2.67	3.92		
<b>Intrastates</b>																	
Oklahoma Intrast	1.93	2.09	2.48	2.47	3.19	3.06	3.33	3.94	4.00	4.31	4.48	4.14	4.03	2.26	3.84		
South Texas Intrast	1.91	2.11	2.49	2.65	3.22	3.12	3.40	3.90	4.02	4.40	4.54	4.23	4.19	2.31	4.01		

Note: The prices above are volume-weighted average prices for the price point and period indicated. The annual average and year-to-date prices are volume-weighted averages of the entire period shown and not simple averages of the component monthly averages.

# NOAA's Erma to Eye Arctic in Advance of Drilling

Even though little offshore oil and gas drilling above the Arctic Circle has happened or is being planned in the near-term, a cousin of the cyber watchdog that was born during the Macondo disaster will soon be eyeing the polar frontier.

The federal Bureau of Safety and Environmental Enforcement (BSEE) and the National Oceanic and Atmospheric Administration (NOAA) have joined forces to enhance the Environmental Response Management Application — Erma for short — for the Arctic region by this summer.

Gulf Erma is the same interactive online mapping tool used by federal responders during the Macondo spill. The new watchdog will be Arctic Erma.

“This emergency response tool was invaluable when managing the *Deepwater Horizon* response,” said BSEE Director James A. Watson, who served as the federal on-scene coordinator for the US Coast Guard during the disaster. “Adding this tool to the Arctic region would provide a tremendous boost to the current oil spill response capabilities there.”

Erma provided real-time information to everyone involved in the Gulf of Mexico disaster two years ago and will now begin providing coverage for the Arctic, said Monica Medina, NOAA principal deputy under secretary for oceans and atmosphere.

“Launching this tool for responders, media and the public during the *Deepwater Horizon* oil spill was a groundbreaking technical achievement and one of the most significant contributions NOAA provided to the historic, large-scale response,” Medina said.

She added, “Reconfiguring this application to meet the needs of responders in the remote marine Arctic environment could prove to be the most critical tool in effectively preparing for, responding to, and mitigating situations where limited assets, personnel and facilities exist.”

Medina said that in developing this project for the Arctic, NOAA, with support from BSEE, will work with state, local and indigenous communities as well as academia and industry to share information on how Erma can best support an emergency response and protect the region’s unique lifestyle and resources.

Arctic Erma will bring together all of the available information needed for an effective emergency response in the frozen frontier.

In a nutshell: In an emergency situation, Arctic Erma is equipped with near real-time oceanographic observations and weather data from NOAA and critical information from BSEE and numerous other federal and state response agencies.

Erma integrates and synthesizes real-time and static data into a single interactive map, providing a quick visualization of the situation and improving communication and coordination among responders and environmental stakeholders.

Medina said responders can further customize the tool with environmental, logistical and operational data such as fishery closure areas, resources at risk maps and mariner notices, depending on the need.

NOAA originally began developing Arctic Erma to address escalating energy exploration and transportation activity in the region combined with the emerging risk of spills and other accidents. As the polar ice cap melts, more of the

region opens to shipping — with the route helping cut days and weeks off normal travel time from Europe to Asia.

In September, the Arctic Institute reported the Northern Sea Route and all of the channels along the Northwest Passage were almost ice free for extended periods of time. The institute said that since 2007, both passages have been temporarily free of ice during the late summer — but now as the ice sheet melts, both are becoming more accessible to marine traffic.

Marine traffic along the Northern Sea Route is expected to double as larger ships begin using the route. Last summer, the first supertanker, the 160,000-ton Suezmax-class *Vladimir Tihkonov*, used the shorter route from Europe to Asia — cutting several days off its sailing time and in doing so, saving money for the shippers.

As the amount of marine traffic increases, so does interest in oil and natural gas drilling, which means Arctic Erma has arrived at a very critical time.

BSEE is partnering with NOAA to complete the project, with the goal of having the tool available to the response community ahead of any future drilling in federal waters offshore Alaska.

Medina and Watson said that when operational, Arctic Erma will contain information such as the extent and concentration of sea ice, locations of ports and pipelines and vulnerable environmental resources for spill responders to make rapid, science-informed response decisions.

**John A. Sullivan, Houston**

## COMPARATIVE FUEL PRICES

(Cash Market)  
May 04, 2012

### APPALACHIA

Appalachian Pool Dlvd (Util)	Ohio/Big Sandy River Coal
\$2.43/MMBtu	\$58.25/ton 2.43/MMBtu

### EAST COAST

New York City Gate	Heating Oil—No. 2*	Residual 0.30%	Residual 1.00%
\$2.47/MMBtu	314.73¢/gal \$22.69/MMBtu	\$121.54/bbl \$19.33/MMBtu	\$115.71/bbl \$18.40/MMBtu

### GULF COAST

Natural Gas Texas Onshore Dlvd (Util)	Natural Gas Louisiana Onshore Dlvd (Util)
\$2.38/MMBtu	\$2.35/MMBtu

Heating Oil—No. 2*	Residual 0.7%	Residual 3.0%	WTI Cushing
314.08¢/gal \$22.65/MMBtu	\$117.78/bbl \$18.73 /MMBtu	\$107.67/bbl \$17.13/MMBtu	\$104.73/bbl \$18.06/MMBtu

**NOTES:** (1) Residual=Residual Fuel Oil, priced exclusive of taxes; (2) WTI=West Texas Intermediate crude oil; (3) % = % of sulfur content. \*Average sulfur content = 0.2%-0.5%.

**SOURCES:** Gas: Natural Gas Week; all prices volume-weighted. Oil: The weekly average of The Oil Daily's cash price postings.

# Texas Not Out Of Woods Even With Mild Summer

Last summer's record-breaking heat wave and severe drought in Texas gave the state's grid operator quite the headache, causing the Electric Reliability Council of Texas (Ercot) to issue several low reserve warnings and request that customers conserve energy. But this coming summer is likely to bring some welcome relief to the state's electricity grid, with weather forecasters now predicting less extreme temperatures than were seen last year.

A key reason for the milder yet still seasonal outlook is ample winter and spring rainfall, which WeatherBell Analytics energy analyst Alan Lammey said put a substantial dent in the state's bone-dry conditions. "We are still going to get hot in Texas, but not the blow-torch conditions of last year."

More than a month's worth of triple-digit temperatures hit Houston, Dallas and Austin last summer, with barely any rain, straining the state's electricity grid. Those record-breaking temperatures combined with the increased electricity demand caused an all-time peak demand record of 68,294 MW in early August (NGW Sep. 5'11).

But even if this summer is less blistering, Ercot expects to use a variety of resources to meet power loads and reduce the likelihood of rotating outages. That includes returning to service nearly 2,000 MW of capacity that had been mothballed.

"Even with this additional generation, we expect that there may be some calls for conservation when energy use is particularly high or if generation supplies are impacted by unplanned outages," said Ercot Chief Executive Trip Doggett.

Last week, the regulator released its Seasonal Assessment of Resource Adequacy for summer 2012, a quarterly report initiated in 2011, which indicates the possibility of tropical storm activity early in the summer and the potential for more variable rain.

Ercot expects to have nearly 74,000 MW of generation resource available to serve summer needs. This includes the previously mothballed resources, along with more than 2,075 MW of wind power from the coastal region and another 48 MW of commercial-scale solar power.

But long term, sources contend that if Ercot does not make some key changes, the state's astronomical population growth and increasingly high energy usage will make electricity grid problems only worse.

Erika Benson, president of energy firm Benson International Group, which has been working with Texas legislators and Ercot to address the state's electricity issues, said there are four solutions that need to be continually implemented and updated.

"The state needs a combined approach of distributed generation and energy storage, along with energy efficiency and demand response," Benson said. "Without those, re-

gardless of generation growth or gas prices going up, the problem will not be solved."

Natural gas prices are so low that investors don't want to tie up resources by building a plant or entering a long-term contract with different utilities because it will only lose money, Benson said, adding that "not a lot of new generation is being built in Texas." Added to this, the state has seen a boom in wind power, but finding financing for future wind projects will be difficult unless the production tax credit is renewed.

Combined with the other solutions, Benson said that distributed generation would serve as an overall mechanism to lighten system demands.

"Texas grows each year and with that there is increased demand on the system, and when you are not adding generation something has got to give. You need to start by taking users off on a consistent basis and that's where distributed generation comes in," she explains.

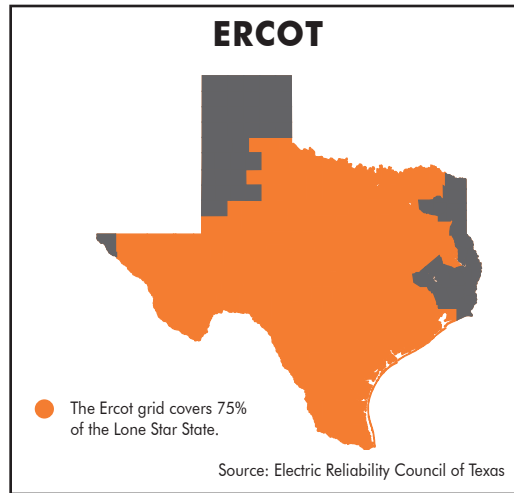
Specifically, Benson said distributed solar power generation has a significant potential in Texas that has yet to be tapped. "Solar is emis-

sions free, would assist utilities with reliability and also really become an opportunity for a utility to look at taking large commercial industrial users off the system when the need may be to keep prices lower for rate payers."

But Benson said that there aren't incentives in place for utilities to have distributed generation power plants.

"The rules aren't set up in a way for them to take advantage and this is something we [Benson International] are working on now."

Alex Benedetto, Washington



## SPOT ELECTRICITY TRADING

Trading Dates: April 30-May 4, 2012

NEW YORK MERCANTILE EXCHANGE (NYMEX) (HENRY HUB)

POINT	Avg. Price This Week	Avg. Price Last Week	Change	Year Ago	Month Ago
Cinergy	\$35.70	\$29.10	\$6.60	\$44.00	\$28.38
COB	—	—	—	—	—
Comed	—	—	—	—	—
Entergy	—	—	—	—	—
ERCOT	31.30	52.40	-21.10	37.38	29.50
Into TVA	—	—	—	—	—
Mid-Columbia	8.40	11.80	-3.40	25.25	15.00
NEPOOL	31.00	30.60	0.40	44.88	29.25
Palo Verde	22.60	20.40	2.20	35.13	18.63
PJM-West	40.70	33.10	7.60	48.88	34.63

Notes: (1) Prices in \$/MWh. (2) Prices are for next day peak delivery. Sources: Staff and wire reports.

## Pipeline Now Supplying Water for Marcellus Shale Well Completions

A new fresh water pipeline supporting Marcellus Shale drilling in north-central Pennsylvania is operational and, according to its developers, has already eliminated 2,000 trips by heavy trucks over rural roadways.

Aqua America and Penn Virginia Resource Partners (PVR) said their line is the first to pipe water directly to drill sites in the Marcellus without the public-highway use of heavy-weight 5,400-gallon tanker trucks.

The 12-inch diameter steel pipeline largely parallels the trunkline of PVR's gathering system in Lycoming County and shares existing rights-of-way, helping reduce costs.

Hydraulic fracturing operations consume huge amounts of fresh water, which is a key issue raised by green groups and others in areas where water is a scare resource. Water usually is trucked in and the wastewater trucked out to approved storage sites, such as deepwater injection wells.

### LNG Update:

Alaska officials have given TransCanada Alaska the green light to shift the focus of its Alaska Gasline Inducement Act (Agia) license to constructing a large-diameter line that will run from Alaska's North Slope to the Kenai Peninsula in south-central Alaska for in-state use, liquefaction and export (NGW Apr.2'12).

TransCanada, Exxon Mobil, ConocoPhillips and BP have forged a deal to commercialize 35 trillion cubic feet of now-stranded North Slope gas by focusing on developing a 3 billion cubic feet per day LNG export project as an alternative to a pipeline to Alberta, Canada. The parties agreed to do this work within an Agia framework that provides financial incentives and regulatory support from the state.

\*\*\*

Cheniere Energy is moving forward with the regulatory process for its next liquefaction project, the Corpus Christi LNG export terminal in Texas. The US Federal Energy Regulatory Commission has asked the Office of the Under Secretary for Defense if Cheniere's proposed Corpus Christi development would impact any military activities or installations.

The 2.6 billion cubic feet per day export project is likely to see a smooth approval from the under secretary, given that other proposed LNG export projects on the US Gulf Coast, including Cheniere's fully approved Sabine Pass project, have already been cleared.

### Infrastructure Update:

Eagle Rock Energy Partners is still assessing fire damage at its Phoenix-Arrington Ranch processing facility in the Texas Panhandle. The partnership said there were no injuries and damage appears to be concentrated at the inlet header system, which is the primary receipt point for the raw natural gas gathered from the field. The cryogenic unit or processing towers may have escaped serious damage.

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Tata Steel has been awarded a \$162 million contract to provide pipe for Discovery Producer Services natural gas pipeline in Keathley Canyon in the Gulf of Mexico. Discovery Producer Services is a joint venture between Williams partners and DCP Midstream Partners.

Tata Steel said it will supply the Keathley Canyon Connector with 214 miles of 20-inch pipe manufactured at Tata Steel's 42-inch mill in Hartlepool, England, with delivery scheduled for the second half of the year.

The Keathley Canyon Connector will have a gathering capacity of more than 400 million cubic feet per day and will collect gas from the Keathley Canyon, Walker Ridge and Green Canyon areas. The pipe will be in 7,380 feet of water.

### Macondo Aftermath:

US District Judge Carl Barbier has set a Jan. 14, 2013, trial date to determine BP's fault in the Macondo disaster. The initial trial date had been set in March, but was postponed after BP announced a class-action settlement was being negotiated.

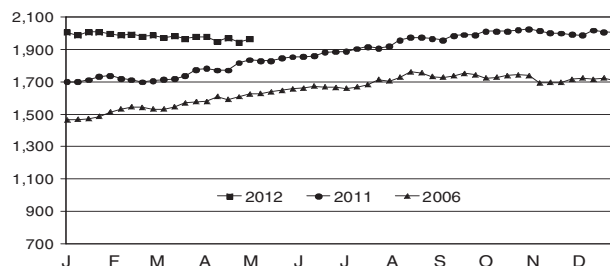
(continued on page 15)

## BAKER HUGHES RIG COUNT

Week Ended May 4

Rotary Rigs

	Current Week	Previous Week	Year Ago
Total US	1,965	1,945	1,836
Land	1,899	1,878	1,787
Inland Waters	22	22	19
Offshore	44	45	30
Gulf of Mexico	44	45	29
Total Canada	131	134	123
US Rigs Exploring for:			
Oil	1,355	1,328	934
Gas	606	613	890
Unspecified	4	4	12
US Rigs by State:			
Arkansas	23	23	34
California	45	43	41
Colorado	65	67	72
Louisiana	130	126	174
New Mexico	87	83	73
North Dakota	197	196	161
Oklahoma	198	198	182
Pennsylvania	96	97	110
Texas	933	925	816
West Virginia	21	22	17
Wyoming	39	39	42



Source: Baker Hughes

(continued from page 14)

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US District Judge Carl Barbier last week gave preliminary approval to a proposed class-action settlement over claims against BP for the 2010 Macondo disaster in the Gulf of Mexico. The judge set a fairness hearing for Nov. 8 when he will consider final approval of the plan.

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US Attorney General Eric Holder said last week more criminal charges can be expected over the Macondo disaster. A former BP engineer, Kurt Mix, has entered not guilty pleas to charges he destroyed more than 300 emails that referenced the flow rate.

Exploration & Production:

The Louisiana Department of Natural Resources (DNR) reports that the number of rigs operating in federal waters off Louisiana's coast has reached 41 in the most recent weekly count that ended Apr. 27. The DNR said this is the first time rig activity has surpassed 40 since a few weeks before federal regulators declared a months-long ban on deepwater drilling in the Gulf of Mexico in late May 2010.

North American Shale Update:

The Pennsylvania Department of Environmental Protection has fined Ultra Resources \$40,000 over several violations involving hydraulic fracturing fluid at a well site in Potter County.

The agency said inspections showed violations in February, March and July 2011

Mergers & Acquisitions:

Energy Transfer Partners will buy Sunoco for \$5.3 billion in a cash and stock deal. The deal gives ETP, a Dallas-based natural-gas pipeline owner, a new transportation system for other hydrocarbon products.

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Williams Partners has completed its \$2.4 billion acquisition of Caiman Energy's subsidiary, Caiman Eastern Midstream. The deal helps push Williams Partners into the lead as a major provider of gathering, processing and transportation services in the Marcellus Shale.

Also Noted:

**EPA firestorm:** Al Armendariz, head of the federal Environmental Protection Agency's South Central Region, which includes Texas, has resigned over a speech he gave two years ago in which he compared EPA tactics to ancient Roman pacification methods. "[T]hey'd find the first five guys they saw and they'd crucify them. ... Find people who are not complying with the law and you hit them as hard as you can and make examples of them," he said in part. Samuel Coleman will step in as acting administrator.

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**Name changed:** Gallery Management Holding has changed its name to T5 Corp.

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**CIO named:** American Electric Power has named Alberto Ruocco vice president and chief information officer.

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**VP picked:** Iberdrola USA has named Jose Maria Torres vice president of finance and control.

GAS PRICE TRENDS																
(\$/MMBtu)	CALIFORNIA		ROCKY MTNS	NEW MEXICO	TEXAS				MID-CONT.	LOUISIANA			MID-WEST	APPA-LACHIA	SOUTH-EAST	NEW ENG.
	South	North			Gulf Coast Offshore	Gulf Coast Onshore	Central	West		Gulf Coast Offshore	Gulf Coast Onshore	Northern Louisiana				
	<b>May 07, 2012</b>															
Inter (Well)	—	—	1.91	1.90	2.12	2.15	2.16	2.14	2.05	2.15	2.17	2.15	—	2.24	2.17	—
Intra (Well)	2.23	—	1.88	—	2.13	2.17	2.16	2.14	2.03	2.15	2.17	2.14	—	—	—	—
Dlvd (Pipe)	2.25	2.36	2.03	2.07	2.19	2.23	2.25	2.21	2.15	2.22	2.24	2.22	2.26	2.35	2.32	2.47
Dlvd (Util)	2.25	2.33	2.36	2.22	—	2.38	2.42	2.29	2.40	—	2.35	2.36	2.29	2.43	2.70	2.50
<b>April 2012</b>																
Inter (Well)	—	—	1.74	1.66	1.86	1.84	1.80	1.81	1.79	1.87	1.86	1.86	—	1.95	1.86	—
Intra (Well)	2.18	—	1.71	—	1.87	1.86	1.80	1.81	1.77	1.87	1.86	1.85	—	—	—	—
Dlvd (Pipe)	2.20	2.20	1.86	1.83	1.93	1.92	1.89	1.88	1.89	1.94	1.93	1.93	2.03	2.06	2.01	2.25
Dlvd (Util)	2.20	2.20	2.19	1.98	—	2.07	2.06	1.96	2.14	—	2.04	2.07	2.05	2.14	2.41	2.39
<b>First Quarter 2012</b>																
Inter (Well)	—	—	2.28	2.20	2.22	2.32	2.44	2.35	2.30	2.40	2.40	2.27	—	2.34	2.36	—
Intra (Well)	2.53	—	2.25	—	2.23	2.34	2.44	2.35	2.28	2.40	2.40	2.26	—	—	—	—
Dlvd (Pipe)	2.55	2.70	2.40	2.37	2.29	2.40	2.53	2.42	2.40	2.47	2.47	2.34	2.56	2.45	2.51	3.58
Dlvd (Util)	2.55	2.66	2.73	2.52	—	2.55	2.70	2.50	2.65	—	2.58	2.48	2.56	2.53	2.89	3.96
<b>2011 Average</b>																
Inter (Well)	—	—	3.49	3.52	3.82	3.75	3.91	3.63	3.64	3.68	3.84	3.81	—	3.88	3.73	—
Intra (Well)	3.91	—	3.46	—	3.83	3.77	3.91	3.63	3.62	3.68	3.84	3.80	—	—	—	—
Dlvd (Pipe)	3.93	3.95	3.61	3.69	3.89	3.83	4.00	3.70	3.74	3.75	3.91	3.88	3.87	3.99	3.88	4.67
Dlvd (Util)	3.93	3.95	3.94	3.84	—	3.98	4.17	3.78	3.99	—	4.02	4.02	3.87	4.07	4.29	4.65
<b>May 2011</b>																
Inter (Well)	—	—	3.88	3.90	4.11	4.12	4.18	4.04	4.07	4.15	4.20	4.13	—	4.34	4.16	—
Intra (Well)	4.22	—	3.85	—	4.12	4.14	4.18	4.04	4.05	4.15	4.20	4.12	—	—	—	—
Dlvd (Pipe)	4.24	4.39	4.00	4.07	4.18	4.20	4.27	4.11	4.17	4.22	4.27	4.20	4.33	4.45	4.31	4.63
Dlvd (Util)	4.24	4.37	4.33	4.22	—	4.35	4.44	4.19	4.42	—	4.38	4.34	4.36	4.53	4.73	4.67

**NOTES:** (1) Inter = Interstate Intra = Intrastate Well = Wellhead Dlvd = Delivered Pipe = Pipeline Util = Utility (2) This table presents historical data from the Gas Price Report. (3) R = Revised. (4) Mid-Cont. = Mid-Continent New Eng. = New England (5) Since Jan. 3, 1994, California prices have been divided into North to reflect gas delivered from Pacific Gas Transmission Co. to northern California and South to reflect gas delivered to southern California via the Transwestern Pipeline Co., El Paso Natural Gas Co. and Kern River Gas Transmission pipeline systems. Previous reporting for the state concentrated on southern California; thus, the historical prices in the South column properly reflect trading for southern California. Natural Gas Week has no similar history of prices for northern California. (6) All prices are volume-weighted.

# Canada Seeks Drillers for Potential Offshore Plays

Offshore Canada hasn't been among the world's most active oil and gas drilling spots in recent years, but areas off two of the three coasts in the Great North last week were opened up with new parcels to potential operators.

In Atlantic Canada, Nova Scotia is offering its largest call for bids yet issued, said Michael Johnson, executive director of business development and corporate services in the province's Energy Department.

Up for bid are 11 parcels covering 7.6 million acres, including six parcels nominated by the oil and gas industry, he said at last week's Offshore Technology Conference 2012 (OTC) in Houston.

Six parcels are up for bids in the icy Arctic waters of the Beaufort Sea off the Northwest Territories, offered by the National Energy Board, said David Ramsay, minister of industry, tourism and investment for the territories. Those bids will be opened in September.

Ramsay cited studies that found the remote regions above the Arctic Circle have an abundance of resources, including an estimated 90 billion barrels of recoverable oil, more than 1,600 trillion cubic feet of natural gas and 44 billion barrels of natural gas liquids. Such volumes have the potential to rival the Gulf of Mexico, he said.

The much smaller area offshore Nova Scotia also contains ample opportunities, Johnson told the OTC audience. An analysis of the region's potential showed the possibility for 8 billion barrels of oil and 120 Tcf of gas.

Some of the sites in the new bid round are near the Exxon Mobil-operated Sable Offshore Energy Project, the province's only producing offshore properties, and Encana's Deep Panuke complex, due to begin production later this year. Johnson said the parcels include both oil and gas prospects.

He expressed great optimism on the upcoming bids, which will be opened in November. Johnson cited the last bid round results in January, when Royal Dutch Shell offered C\$970 million (US\$985 million) on four deepwater parcels.

The Nova Scotian official credited a \$15 million investment the province made in developing a new geological picture of its offshore with the goal of reinvigorating exploration efforts. Pointing to the results from Shell's bids, Johnson said, "That's a nice return to Nova Scotia on its \$15 million investment."

Johnson indicated the Shell parcels appear to be oil prone. The Sable Island and Deep Panuke properties both are gas producers. Oil will be the prime target in the tracts in the upcoming bid round, he said. "That's the new story for Nova Scotia at OTC this year," he said.

The offshore area there is "significantly under explored," he reminded his audience. Only 207 wells have been drilled since the first bit turned into the seabed in 1967. By comparison, more than 50,000 holes have been punched into the Gulf of Mexico.

NT's Ramsay said Chevron will be conducting seismic work this summer on a previously awarded block, with Exxon making plans for exploration drilling later in the decade. The two companies and BP have rights on the three exploration bids granted to date.

Earlier this year, the NEB completed an offshore review that requires parties that want to drill in Arctic waters to make public their safety, contingency, emergency response and environmental protection plans. The minister said these policies establish certainty and surety to the industry about what will be required of them before operating in the environmentally sensitive area.

Northwest Territories also is the location of the proposed 700-mile Mackenzie Gas Project that would connect some 6 Tcf of proved gas reserves in the Mackenzie River Delta to the existing Canadian gas grid in Northern Alberta. The project appears to be on hold after proponent ConocoPhillips suspended its participation and took a US\$525 million charge against earnings for its investment, while other partners have begun closing pipeline-related offices and reducing activity. Royal Dutch Shell is seeking to sell its stake (NGW Apr.16'12).

Ramsay continues to be optimistic about the C\$16.2 billion project, echoing recent comments by Northwest Territories Premier Bob McLeod (NGW Apr.30'12). "I continue to believe the Mackenzie Gas Project is a matter of when, not if," the minister said at OTC. "It cannot be estimated how important the pipeline is to us."

One sign of hope Ramsay sees is construction beginning this winter for a long awaited all-weather road from Inuvik in the Mackenzie Delta to Tuktoyaktuk on the Beaufort Sea coast. The federal government is helping to fund the project, which will be a boost to the local economy.

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**Rig count:** There were 129 rigs drilling for natural gas and oil in Western Canada as of May 1, 15 fewer than reported for the previous week by the Canadian Association of Oilwell Drilling Contractors (CAODC).

During the same period a year ago, CAODC reported that 125 rigs were drilling in the region.

A total of 800 rigs are available in the region, one more than in the CAODC's previous report.

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**Working gas** in all Canadian storage facilities were reported to be 70.7% of capacity as of Apr. 27, with a 2.6 billion cubic feet injection from the week before, according to the most recent Canadian Enerdata gas storage survey.

A total of 500.2 Bcf of gas was in storage last week; capacity is 707.4 Bcf. Stores were 31.1% full a year ago.

Working gas levels in facilities west of the Manitoba-Saskatchewan border rose to 361.6 Bcf, up from 355.8 Bcf the week before; capacity is 451.7 Bcf.

Working gas levels east of the border fell to 138.6 Bcf, down from 141.7 Bcf the week before; capacity is 255.7 Bcf.

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**The composite spot import price** this week is US\$2.19/MMBtu for gas leaving Canada and entering the US through six border-crossing points.

*Natural Gas Week's* May 9, 2011, average for Canadian exports was US\$4.20/MMBtu.

Canada's average spot wellhead price is US\$1.80/MMBtu; the price for the same week a year ago was US\$3.77/MMBtu.

**Barbara Shook, Houston**



## UK Trade Minister Says North Sea Technology Finding Home in Gulf

Both the UK and the North Sea are open for business.

That was the message UK Minister of State for Trade and Investment Lord Green gave at a reception in Houston last week hosted by the British Consulate-General Houston.

The reception was in celebration of the Offshore Technology Conference 2012 and the 170th anniversary of the UK's first ties to Texas, which were made in 1842.

"There has been a record number of investments made in the North Sea," Green said, adding that the investment charge is being led by smaller companies "that are going deeper and deeper" in the search for oil and natural gas.

That deepwell technology, he said, being developed for use in the North Sea is finding a home in the Gulf of Mexico, as well as offshore Brazil and Africa. The technology and the expertise is becoming a worldwide tool for the E&P industry — as it pushes into deeper waters.

"The expertise being developed in Aberdeen is traveling around the world," Green said. He added that a business friendly culture and a reasonable tax regime in the UK have also helped attract new business to the North Sea.

There is a big link between Houston and the UK, said British Consul General Andrew Miller, adding that there were about 350 companies from the UK at the OTC.

One of those companies is BP.

The UK-based supermajor now has five drilling rigs running in the Gulf of Mexico — just a little over two years since its Macondo well blew out, killing 11 workers and

creating the worst US maritime oil spill.

According to BP, the company plans to add three more drilling rigs to its fleet. In October, BP was given permission by US federal officials to drill a new well in the company's Kaskida field, which was first discovered in 2006.

"There is significant bilateral trade between the UK and Texas, and we're seeing better opportunities that at any point before," Miller said. "The North Sea will see major exploration and production investments in 2012, and the UK is looking with interest into the new trends and developments of the US energy sector."

Backing the optimistic report from Green and Miller is a just released report from Barclays Corporate Banking. The report says the banking group has been involved in \$355 million in deals for acquisitions as well as exploration and production in the first quarter.

The funding has been provided for companies working in the North Sea and in the US.

The activity suggests confidence is building among operators and service companies, according to Walter Cumming, head of the Oil and Gas unit at Barclays Corporate Banking.

"The first quarter of this year has been extremely busy across the industry, and comparatively, far busier than the same period in 2011," Cumming said. He added that the caution exhibited by a lot of UK- and US-based companies in 2011 is, for the most part, gone.

"There is liquidity in this sector and the stable commodity price is motivating the increase in deal making and activity, buoyed by what is effectively a backlog of work held over from the last year," Cumming said.

**John A. Sullivan, Houston**

### CANADIAN PRICE REPORT

(\$U.S. per MMBtu/\$Can per Gigajoule)

	BRITISH COLUMBIA			ALBERTA			SASKATCHEWAN	MANITOBA	ONTARIO		
	Total Province	Huntingdon/	Kingsgate/	Total Province	AECO-C*	Empress	Total Province	Monchy	Emerson	Toronto	Niagara
		Sumas Border	Eastport Border		Hub	Border		Border	City Gate	Border	
Spot	Spot	Spot	Spot	Spot	Spot	Spot	Spot	Spot	Spot	Spot	
<b>MAY 7, 2012</b>											
Wellhead U.S. \$	1.91	—	—	1.61	—	—	1.61	—	—	—	—
Canadian \$	1.88	—	—	1.59	—	—	1.59	—	—	—	—
Delivered to Pipe U.S.\$	2.05	2.05	2.04	1.75	1.76	1.72	1.75	1.83	2.28	2.49	—
Canadian \$	2.02	2.02	2.02	1.73	1.74	1.70	1.73	1.81	2.26	2.46	—
<b>APRIL 2012 AVERAGE</b>											
Wellhead U.S. \$	1.70	—	—	1.38	—	—	1.38	—	—	—	—
Canadian \$	1.69	—	—	1.37	—	—	1.37	—	—	—	—
Delivered to Pipe U.S.\$	1.84	1.81	1.87	1.52	1.57	1.39	1.52	1.58	2.04	2.29	2.30
Canadian \$	1.83	1.80	1.86	1.51	1.56	1.38	1.51	1.57	2.03	2.27	2.29
<b>1ST QUARTER 2012 AVERAGE</b>											
Wellhead U.S. \$	2.32	—	—	1.87	—	—	1.87	—	—	—	—
Canadian \$	2.33	—	—	1.87	—	—	1.87	—	—	—	—
Delivered to Pipe U.S.\$	2.46	2.56	2.37	2.01	2.06	1.81	2.01	2.10	2.69	2.88	3.13
Canadian \$	2.47	2.56	2.37	2.01	2.06	1.81	2.01	2.10	2.69	2.88	3.13
<b>2011 AVERAGE</b>											
Wellhead U.S. \$	3.64	—	—	3.33	—	—	3.33	—	—	—	—
Canadian \$	3.60	—	—	3.29	—	—	3.29	—	—	—	—
Delivered to Pipe U.S.\$	3.78	3.80	3.76	3.47	3.19	3.19	3.47	3.58	3.79	4.18	4.38
Canadian \$	3.74	3.76	3.72	3.43	3.16	3.16	3.43	3.54	3.75	4.14	4.33
<b>MAY 2011 AVERAGE</b>											
Wellhead U.S. \$	3.87	—	—	3.61	—	—	3.61	—	—	—	—
Canadian \$	3.74	—	—	3.49	—	—	3.49	—	—	—	—
Delivered to Pipe U.S.\$	4.01	4.02	4.01	3.75	3.80	3.68	3.75	3.82	4.28	4.68	4.87
Canadian \$	3.88	3.89	3.88	3.63	3.68	3.56	3.63	3.69	4.14	4.53	4.72

NOTES: Prices represent volume-weighted averages of the most recently reported gas sales contracts and price negotiations. \*Denotes pricing at Alberta Energy Co.'s marketing hub in southeastern Alberta. R=Revised.

## Chinese ...

*(continued from page 11)*

“Being more environmentally sensitive is a trend that I think is continuing to develop,” Mi said. He added that the Chinese government is in the process of developing more stringent environmental rules that could cut the amount of coal being used to produce electricity.

That would leave the way open for natural gas to become even more important in both China and the US as a fuel for electricity production.

Mi maintained the system will offer operators a 10% cost savings compared to conventional drilling packages, because of the smaller number of vehicles needed, as well as Honghua replacing the conventional diesel generator with a gas generator, allowing the use of self-produced shale gas for power generation.

“With our solution, about 178 tons of diesel fuel per well can be saved,” Mi said. “Again, not only is that a cost savings, but it is more environmentally sensitive, as gas does not give off the emissions that diesel does when burned.”

Mi added that Honghua’s system could remove about 226 tons of carbon emissions per well.

Exploiting shale gas reserves offers a unique opportunity not only for the US, but China as well, he said, and the Honghua system will help speed that endeavor by bringing more natural gas to market faster, more efficiently and in a more environmentally friendly manner.

“Natural gas will become even more important,” Mi said.

**John A. Sullivan, Houston**

## Waste Management ...

*(continued from page 1)*

Among a total fleet of 30,000 vehicles, WM has 18,000 collection trucks, of which 1,400 are now natural gas-powered. The company plans to add another 1,000 natgas trucks this year. In contrast, the company’s first 1,000 took 11 years.

Woods said the company can convert the collection fleet to natgas via assembly-line built trucks today. Cummins engines are still the only game in town, but several truck brands offer them.

Despite appearances, only one-third of the company’s waste business is residential. The other two-thirds is industrial or commercial covering waste disposal at malls, hospitals and manufacturing plants. The company also works with frac-water transport and as a service provider to the energy extraction industry. The equipment involved on this heavier-duty end of the business is expected to begin turning toward natgas soon with new models expected from Caterpillar and Volvo.

Natgas trucks are 50% quieter, he said, “driver’s love it, customers love it.”

It’s also very economic.

“It pays back pretty darn quick without grants,” he said. The incremental upfront cost of a natgas-powered truck used to be about \$70,000, but now it’s down to about \$30,000. With the recent fuel price gap, the payback period has been running from 12 to 18 months.

“With gas prices where they are today, it pays back in less than 12 months,” Woods said.

Tax credits wouldn’t hurt, he said, but a company with a large fleet can’t live and die by subsidies.

“You don’t want to buy a whole bunch [of trucks] in a

single year. If you do, you have to repeat that purchase pattern,” he said.

But if that purchase pattern is tied to a government subsidy, you may not be able to afford to repeat that pattern if the subsidy goes away, he said, adding it would be a “huge error for us to significantly increase our purchasing just because there is a subsidy. We’ll pay for it in the future,” he said.

One proposal circulating in Congress from Sen. Bob Menendez (D-New Jersey) – co-sponsored by the Senate Majority Leader and 17 others — would renew expired tax credits for NGV purchases offsetting up to \$64,000 off the price of a vehicle. In order to avoid a budget shortfall, the Menendez plan would also impose a small fee on CNG fuel (NGW Mar.19’12).

What if natural gas prices go back up? “They will, but so will diesel ... but the latter will go up at a faster rate because of global demand on oil,” Woods said.

“Oil will rise faster than natural gas ... if I’m wrong, we’ll see,” he said, though he’s confident that the company is headed in the right direction for the next decade at least.

WM is also building fueling stations to support its fleet — much of which has the ideal return-to-base structure that can be centrally fueled. But the company is not as intensely-focused on “seeding” natural gas demand as gas producers Chesapeake (NGW Feb.13’12) and Apache (NGW Jan.9’12), though it is not indifferent to the idea.

“Where it makes sense, we have public access,” Woods said, citing a setup in Marino Valley, California, where there are slow-fill pumps for once-a-day refueling of the collection trucks and a public access fast-fill facility located “outside the fence” that allows transit buses and the public to refuel with CNG.

The company is also moving toward biomethane use where it makes sense.

“We’re a little bit agnostic as to where the fuel is coming from,” he said. With hydrofracking making the gas so cheap, “the economics changed pretty rapidly, dramatically” against biomethane. “I’d love to take it from our own [biomethane] sources,” but that would take trucks and capital. Nevertheless, “we pump a significant amount of biomethane out of our Altamont facility in California, which is where we started.”

And because WM also captures methane from landfills, the company sees itself as an actor in multiple parts of the supply chain for natural gas as a transportation fuel, in both the retail and wholesale points in the marketplace.

The company did have its bio-diesel phase. WM still has about 800 trucks that can run on bio-diesel dating from before the company decided on a strictly natural gas strategy.

But biodiesel is still diesel.

“We were losing payload,” from all the pollution devices, he said, which is part of what drove WM to natural gas. “It was significant, a ton of payload,” he said, and not a ‘ton’ in the figurative sense. Between 2004 and 2010, regulations were ramped up quickly. It went from “mildly invasive” technologies, such as requiring low-sulfur diesel, on to the 2007-10 regulations that required a diesel particulate filter, a catalytic converter, urea tanks and a special type of radiator — 1.5 tons in all.

Woods is “not counting electricity out” having come over from Frito-Lay, which bought all-electric delivery vehicles from Smith Electric Vehicles. Electricity is “not going to mobilize the vehicle” but it can power what he called “parasitic” items like air conditioners, even a trash can pickup arm, as well as keep the vehicle from idling. “That sort of blended technology has a right to succeed in our industry,” he said.

**Michael Sultan and Lauren O’Neil, Washington**

## Gas Giant ...

(continued from page 1)

his portion of the well costs. The program was in place when Chesapeake went public in 1993 and was approved by shareholders in 2005, but reports surfaced in mid-April that McClendon had borrowed as much as \$1.1 billion over the past three years against his interests in these wells.

Although Chesapeake is not financially exposed to McClendon's personal loans, the news that borrowings came in large part from a private equity group Chesapeake was negotiating with to purchase company assets proved too much for investors.

The board responded by stripping McClendon of his chairmanship and has begun the hunt for an independent chairman with "no previous substantive relationship with Chesapeake." It also terminated the well participation program early, without any financial compensation for McClendon.

Adding further fuel to the fire, reports this week said McClendon ran a \$200 million hedge fund on the side that — critically — traded in oil and gas, which several experts in energy trading, corporate governance and commodity-market regulation suggested posed huge conflicts of interest.

"An executive's first responsibility is to shareholders and the betterment of their investment," Carl Holland, who ran the trading-compliance department at former US oil major Texaco, told Reuters, which broke the story. "Personal trading in the commodity around which the CEO's business is based would be a clear no. We would never have tolerated that, ever."

The US Securities and Exchange Commission has subsequently launched an informal inquiry into Chesapeake, although an inquiry in and of itself does not mean any violation of securities laws ultimately took place.

McClendon took on the allegations in comments to analysts during Chesapeake's first-quarter earnings call last week.

"I am deeply sorry for all the distractions of the past two weeks," he said, adding that he "enthusiastically" supported installing an independent chairman to Chesapeake's board.

But McClendon remained ever-defiant. "Your mother told you not to believe everything you read or hear for a good reason."

### Gas Getting Squeezed

In the meantime, Chesapeake the company has been the cause of a separate set of headaches for investors.

Chesapeake is transitioning to a more balanced production

mix comprising oil, natural gas liquids (NGLs) and gas. But that transformation is proving particularly costly with gas prices below \$2.50 per million Btu.

For instance, Chesapeake is massively outspending its operating cash flow these days given the limited funds pulled in from its gas production. As such, it is forced to embark on a massive divestment program that aims to sell assets worth more than Chesapeake's \$11.5 billion market capitalization.

Specifically, the firm plans to sell \$11.5 billion to \$14 billion of assets this year and another \$5.5 billion to \$6.5 billion in 2013. It has already completed the sale of \$2.6 billion in assets so far this year and expects to bridge most of the remaining gap with the sale of its 1.5 million net acres in the West Texas Permian Basin, the joint venture of its 2 million net acres in the Mississippian Lime oil play of Oklahoma and Kansas and a volumetric production payment in the South Texas Eagle Ford shale (NGW Apr.16'12).

Notably, these assets on the block are liquids-rich — highlighting the vicious circle Chesapeake finds itself in as a result of persistently weak domestic gas prices. Low gas prices have effectively dried up the M&A market for dry gas assets, meaning Chesapeake is paradoxically forced to sell liquids-rich assets to raise funds to grow its liquids production.

Chesapeake is also taking the ax to its gas drilling program with new resolve. The company previously envisioned cutting its operated rig count in dry gas plays from 50 at the start of 2012 to 24 in the second half of the year (NGW Feb.27'12). Now that figure will fall to 12, with activity in the Haynesville Shale in East Texas and Louisiana and the North Texas Barnett Shale particularly curtailed. There the rig counts will fall from six to two and capital spending will decline 80%.

This pullback will cause Chesapeake's gas production to decline nearly 6% next year to a midpoint 990 billion cubic feet and McClendon says peak production between the two years will fall a steeper 10% to 12%. This marks the first time Chesapeake has targeted declines in gas production.

"This is a company that's single-handedly responsible for 25% of the gas production growth in the whole US over the last five years, and our production goes down 10% to 12%. So it guarantees that there will be a different gas market going forward," McClendon told analysts.

Chesapeake expects US gas prices to average \$3.50/MMBtu in 2013 and \$5 starting in 2014.

**Casey Sattler, Houston**

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# Gas Market Primed for Sustained Rally, Bullish Signs Cropping Up

Even when the May natural gas contract rolled off the board at just over \$2/MMBtu — setting some of the lowest monthly contract prices seen in a decade — you could feel the market was primed to rally. And rally it did when the US Energy Information Administration handed it the perfect catalyst, a drop in February natural gas production.

The report, which showed a 420 million cubic foot per day decline from revised December lower 48 output of 72.74 billion cubic feet per day, came at just the right moment for bulls. The May settlement of \$2.036 was the ninth in a series of progressively lower expirations — capping a 53.5% decline since the August 2011 settlement of \$4.37. However, June promises to break that streak.

Why? As analyst Stephen Schork noted last week, bears have succeeded in closing under \$2 only four times since September 2001 — and only once in the week leading up to last month's expiration. But even more telling, he said, "[T]he latest [Commodity Futures Trading Commission] report shows that producers have switched from a net short position to a net long position for only the second time since April 2010. Intuitively, producers usually turn to the futures market to hedge future production at current prices."

So, it is notable when producers abandon en mass a strategy that has resulted in an average net short position of 30,210 contracts since the start of 2010.

"When producers switch to a net long position, it means they are unwilling to sell future product at current price levels, and would rather purchase product in the future than produce it. Without steady production, the door opens to a potential supply crunch," Schork said.

He notes that a supply crunch, in fact, did not materialize in April 2010 "thanks to modern shale production" But just the possibility moderated gas prices, so a 23.6% plunge in prices from January to late-April 2010 was followed by a 15.6% rally into late July.

The EIA production report could be the match to ignite a pent-up rally this summer. The odd thing is, the report is not that bullish. While February production was a staggering 6.8 Bcf/d above last year, February 2011 production was hard hit by production shut ins from freeze-offs as far south as Texas. Nonetheless, February 2012 is the fourth straight month that output has exceeded 72 Bcf/d.

The data shows Louisiana output down 0.4 Bcf/d, Wyoming production off 0.2 Bcf/d, while production from "other" states — primarily Marcellus Shale production increased 0.2 Bcf/d.

"We attribute the bulk of the variance to greater-than-anticipated shut-ins, while the remainder may be due to likely facility disruptions in Wyoming. As such, the data is constructive, though not as constructive as a natural decline in output," a report from Canaccord Genuity said. "Looking forward, this announcement does little to change our view that monthly sequential growth in lower 48 production should rebound to 0.5 Bcf/d in March then slow to less than 0.1 Bcf/d this summer."

That's not good news for market bulls, as it would ensure production will stubbornly hold at around 72 Bcf/d

## GAS PRICE REPORT

(\$/MMBtu—Spot)  
May 7, 2012

	Interstate Wellhead		Intrastate Wellhead		Delivered To Pipeline		Delivered To Utility	
	This Week	Bid Week for May	This Week	Bid Week for May	This Week	Bid Week for May	This Week	Bid Week for May
<b>CALIFORNIA</b>								
South	—	—	2.23	2.13	2.25	2.15	2.25	2.15
North	—	—	—	—	2.36	2.15	2.33	2.15
<b>ROCKY MOUNTAINS</b>	1.91	1.71	1.88	1.68	2.03	1.83	2.36	2.16
<b>NEW MEXICO</b>	1.90	1.68	—	—	2.07	1.85	2.22	2.00
<b>TEXAS</b>								
Gulf Coast, Offshore	2.12	1.96	2.13	1.97	2.19	2.03	—	—
Gulf Coast, Onshore	2.15	1.88	2.17	1.90	2.23	1.96	2.38	2.11
Central	2.16	—	2.16	—	2.25	—	2.42	—
West	2.14	1.85	2.14	1.85	2.21	1.92	2.29	2.00
<b>MID-CONTINENT</b>	2.05	1.79	2.03	1.77	2.15	1.89	2.40	2.00
<b>LOUISIANA</b>								
Gulf Coast, Offshore	2.15	1.91	2.15	1.91	2.22	1.98	—	—
Gulf Coast, Onshore	2.17	1.94	2.17	1.94	2.24	2.01	2.35	2.16
North	2.15	1.92	2.14	1.91	2.22	1.99	2.36	2.13
<b>MIDWEST</b>	—	—	—	—	2.26	2.05	2.29	2.09
<b>APPALACHIA</b>	2.24	1.96	—	—	2.35	2.07	2.43	2.16
<b>SOUTHEAST</b>	2.17	1.91	—	—	2.32	2.06	2.70	2.51
<b>NEW ENGLAND</b>	—	—	—	—	2.47	2.25	2.50	2.32
					Composite Wellhead	Delivered to Pipeline	12-Month Strip Nymex	
May 7, 2012					2.21	2.33	2.91	
2012 Outlook					2.89	3.07	—	

for the next few reports. Also, while year-on-year increases would decline closer to 3 Bcf/d, that's only due to the sustained jump in production beginning in March 2011.

A Barclays Capital analysis agrees this is "not the beginning of a declining trend, as Bentek data also showed that supply grew by 41 MMcf/d m/m [month-over-month] and 134 MMcf/d m/m for March and April, respectively."

Texas, which Barclays called "a microcosm for US production" was essentially flat month-over month, though state production was up almost 2 Bcf/d from last year. But it's the areas showing increases that look to have sustained impact.

"The biggest gain continues to come from Pennsylvania, included in 'other states.' This would be primarily Marcellus production growth, up by 0.26 Bcf/d m/m and 3.94 Bcf/d y/y," Barclays said. "Other states production growth also reflected the addition of new wells in Colorado, according to the EIA."

\* \* \*

The *Natural Gas Week* composite spot wellhead price this week is \$2.21/MMBtu, 20¢ more than last week and \$2.20 less than the May 9, 2011, average. The spot delivered-to-pipeline price this week is \$2.33/MMBtu, 21¢ more than last week and \$2.27 less than last year's corresponding average.

**Tom Haywood, Houston**