

Coal Outlook

Vol 35 / No 28 / July 11, 2011

'We know how to do this': EPRI pursues technical solutions to pending EPA regs

Electric utilities are facing sweeping environmental regulations that are forecast to shift the country's fuel mix away from fossil fuels in a significant way. The industry's research arm believes technical solutions to reduce power plant pollution are within reach, but how the requirements will influence power cost and reliability remains to be seen, and it may well depend most on location.

"Just like politics, it is all local," said Michael Howard, president and CEO of Electric Power Research Institute, when asked about the impacts of reconfiguring the US generation portfolio — about half of which is coal-based — to emphasize renewable energy resources, natural gas and efficiency. "This is going to be a really local issue."

In a wide-ranging interview at EPRI's Washington office, Howard underscored that the variety of strategies for complying with the Environmental Protection Agency's upcoming array of rules may be broad, but that technology will be key to keeping electricity affordable, reliable and environmentally responsible.

Next month, EPRI will give the industry insight on the matter when it releases its latest "Prism" analysis for the power sector, detailing how all fuel sources, including coal, can meet future demand in a new regulatory regime aimed at mercury pollution, air toxics, plants' cooling water intake and coal ash waste, in addition to greenhouse gases and other emissions.

The industry-backed, technology-

focused nonprofit unveiled its first Prism model in 2009, creating a diagram of how the utility industry could meet federal caps on carbon dioxide and other greenhouse gases, which were anticipated at that time, and still provide reliable, affordable electricity by keeping coal-fired generation on board.

The organization offered a second Prism last year that made a pitch for regional solutions to lower emissions yet sustain coal plants with pollution controls as a major energy source.

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Market in Review

CAPP coal prices rangebound in short trading week

Central Appalachian thermal coal prices were little changed in the holiday-shortened trading period last week, with the CAPP barge August contract unchanged at \$77.50/st, and the CAPP rail (CSX) August contract assessed at \$78.50/st, down \$1/st.

At the long end of the term structure, the CAPP barge Cal 2012 package fell 45 cents/st to \$81.85/st. The CSX Cal 2012 package was assessed at \$82.30/st, down 25 cents/st.

The level of correlation with the broader energy complex was tested once again, as the nearby NYMEX natural gas futures contract declined 5.5% to \$4.133/MMBtu in the period. At the same time, the NYMEX August crude futures rose 3.4% to \$98.67/barrel.

Overall trading activity was muted in two of four sessions, owing to the July Fourth holiday weekend.

No trades were seen on the over-the-counter market on Friday, July 1, ahead of the extended weekend. Despite the lack of trading, brokers indicated seeing downward pressure on CSX rail prices. Another broker source indicated seeing some "aggressive" offers in the CAPP barge market.

The August CSX physical contract was assessed at \$79/st, down 50 cents/st. The prompt December quarter was assessed at \$78.50/st, also down 50 cents/st on the day.

The long-dated Cal 2012 package

(continued on page 11)

Weekly Price Survey, Traditional Physical Market, week ending Jul 8

Origin/Product	Btu/lb	S02 lb	Transport Mode	Prompt Quarter	Q1 2012	Q2 2012	Cal. Yr. 2012
Northern Appalachia							
Pittsburgh Seam	13,000	<3.0	RAIL	78.20	79.35	79.45	79.45
	13,000	4	RAIL	66.95	68.40	68.70	68.70
Upper Ohio River	12,500	6+	BARGE	52.55	55.00	55.00	55.00
Central Appalachia							
CAPP barge physical	12,000	1.67	BARGE	80.10	83.20	83.95	83.95
Big Sandy/Ohio River	12,000	1.2	BARGE	82.40	85.20	86.45	86.45
CAPP rail (CSX) physical	12,500	1.6	CSX	76.35*	79.65*	80.85*	81.85*
Big Sandy/Kanawha	12,500	1.2	CSX	79.65	82.75	83.25	83.25
Thacker/Kenova	12,500	1.6	NS	78.75*	82.45*	83.50*	84.00*
Thacker/Kenova	12,500	1.2	NS	81.50	85.65	86.65	86.65
Illinois Basin							
	11,800	5	RAIL	47.80	47.90	47.90	47.90
	11,500	2.5	RAIL	54.90*	55.00*	55.50*	55.50*
	11,000	5	BARGE	45.00	45.00	46.00*	46.00*
	10,500	6+	RAIL	38.40	38.40	38.40	38.40
Powder River Basin							
	8,800	0.8	RAIL	13.80*	14.45*	14.95*	15.15*
	8,400	0.8	RAIL	11.65*	12.00*	12.45*	12.65
Rocky Mountain							
Colorado	11,700	0.8	RAIL	41.00	41.00	41.00	41.00
	11,000	0.8	RAIL	32.00	32.00	32.00	32.00
Utah	11,500	0.8	RAIL	43.00	43.00	43.00	43.00

Two assessments in this table were renamed effective Dec. 20, 2010: CAPP barge physical was previously named NYMEX look-alike; CAPP rail (CSX) physical was Big Sandy/Kanawha with the same, unchanged specifications listed in the table.

OTC Hedge Price Monitor, Friday-Thursday average of Platts Daily OTC Assessments

Delivery: Within Calendar Period Specified.

Region/Product	Btu/lb	Sulfur Lbs/ MMBtu	Sulfur Percent	Q4 2011	Q1 2012	Q2 2012	Cal. Yr. 2012
Central Appalachia							
CAPP barge OTC	12,000	1.67	1.00	77.80*	79.30*	81.20*	81.85*
CAPP rail (CSX) OTC	12,500	1.6	1.00	78.75*	80.25*	81.50*	82.30*
Powder River Basin							
PRB 8,800 OTC	8,800	0.8	0.35	13.80*	14.45*	14.95*	15.15*
PRB 8,400 OTC	8,400	0.8	0.35	11.65*	12.00*	12.45*	12.65

The four assessments in this table were renamed effective Dec. 20, 2010; the underlying specifications and methodology were not changed. CAPP barge OTC was previously named NYMEX/barge; CAPP rail (CSX) OTC was CXS - Big Sandy/Kanawha; PRB 8,800 OTC was Wyoming/Rail 8,800; and PRB 8,400 OTC was Wyoming/Rail 8,400.

Weekly Coal Production Totals

	Week Ended		Year-to-Date	
	07/02/11	07/02/10	07/02/11	07/02/10
Bituminous and Lignite	18,837	19,914	535,340	536,390
Anthracite	33	28	1,024	895
U.S. Total	18,870	19,941	536,363	537,286
Railroad Cars Loaded	119,935	127,876	3,551,686	3,530,448

For state breakdowns, visit:

www.eia.doe.gov/cneaf/coal/weekly/weekly_html/wcpage.html

Petcoke Spot Price Assessments

Origin	Sulfur	HGI	Current price range
US Gulf	6% - 6.5%	40	102.00-122.00
	5% - 6%	\<50	120.00-140.00
	4% - 5.5%	50	120.00-140.00
US West Coast	4%	50	155.00-190.00
Venezuela	4%	45	120.00-135.00

Editor's Note: All petroleum coke prices are quoted in metric tons

MARKETSCOOP

Some CFTC Commissioners decry lack of Dodd-Frank plan

The Commodity Futures Trading Commission began last week what is expected to be a months-long process of finalizing dozens of financial reform law rules, but some commissioners said they are worried the agency may be rushing rules into law before they are properly considered.

"We are beginning without a plan," Commissioner Jill Sommers said at Thursday's CFTC meeting in Washington.

The CFTC has not set a schedule for finalizing its Dodd-Frank Wall Street Reform and Consumer Protection Act rules and has only laid out a loose timetable that would see the agency approve 46 rules over the next six months, Sommers noted.

"While a few of these rules will be relatively straightforward and noncontroversial, the vast majority are based on extremely complex proposals for which staff has yet to even complete a comment summary," Sommers said. "If we stick to such a schedule, I foresee a process that haphazardly requires votes to be taken when the commission has not had time to sufficiently consider all of the implications of the final rules."

Commissioner Scott O'Malia, who wants the CFTC to release a formal rulemaking schedule that would be open for public comment, called the current process a "rulemaking mystery."

O'Malia said market participants need clarity on when they will have to comply with the new rules, such as swaps clearing and reporting requirements.

"I believe firms are sincerely interested in fully complying with the final regulations, if only the commission would inform them when they should be prepared to comply," O'Malia said. "Market participants are preparing to implement the final regulations, but have no idea if they should be ready in eight or 18 months. By providing the market with a plan, it will improve compliance with our regulations."

Following Thursday's meeting, CFTC Chairman Gary Gensler indicated that there was no definitive plan for finalizing rules — and that CFTC officials may not decide which rules will be voted on until roughly a week before a given meeting (*PCT 7/7*).

Gensler said the CFTC intends to finalize rules on whistleblower protections and incentives, swap date repository registration and agriculture swap rules at July and August meetings, but he said that is subject to change.

Commissioner Bart Chilton said the CFTC was committed to not rushing rules into law. "I think we're in agreement, it's more important to get it right than to do it fast."

Commissioner Michael Dunn called the CFTC's rulemaking process "extremely transparent," but cautioned that he would be far more critical of rules set for final implementation than he was when they were first proposed. "I was pur-

posely liberal with voting on proposed rules, because I felt it was more important to get public comment than to nitpick the rules at their formative stages," he said.

Dunn said he wants all final rules to follow the agency's principles-based model, but budget constraints at the CFTC could force him to approve rules that are "more prescriptive than [he] would generally favor."

— *Brian Scheid*

India's MMTC seeks 600,000 mt of thermal coal of any origin

Indian state-run trading firm MMTC Limited has invited bids to import 600,000 mt of non-coking steam coal, to be delivered at the city of Bhilai during FY 2011-12 and 2012-13.

MMTC is importing the material on behalf of NSCPL, a joint venture company of NTPC Limited and Steel Authority of India Limited (SAIL). The coal will be supplied to NSCPL's Bhilai plant in the east Indian state of Chhattisgarh.

"The scope of work includes supply of imported non-coking steam coal to an Indian port, arranging vessels, stevedoring, handling, storage, port clearances, and arranging railway rakes, loading, transportation and delivery at NSCPL Bhilai," MMTC said in the tender.

The tentative allocation of quantity will be in the range of 40-80,000 mt/month, commencing in September 2011.

Imported coal supplies should have a gross calorific value (air-dried basis) of 5,800-6,300 kcal/kg, and can be of any origin. Total moisture (as-received basis) should be at 10-20%, while ash (ADB) and sulphur (ADB) should be 8-20% and 0.70-0.90% respectively.

The last date for bid submission is July 27, 2011.

— *Sapna Dogra, New Delhi*

NEW PLANTS

Duke Energy and Progress Energy shareholders to vote August 23

Duke Energy and Progress Energy shareholders will meet in North Carolina August 23 to vote on their merger, the companies said Thursday as they issued a final proxy statement.

Progress shareholders are to vote to approve the merger agreement under which they would get 2.6125 Duke shares per Progress share, making the deal worth about \$14.7 billion at Duke's recent stock price.

However, that would be adjusted to 0.87083 Duke shares when Duke completes a one-for-three reverse stock split, planned for immediately before — and conditioned on — completion of the acquisition.

The companies aim to close the deal by year-end.

Duke shareholders are to vote on approving the stock split, and issuing stock to Progress holders. They do not have to approve the deal itself, but closing is conditioned on approval of those proposals.

The stock split must be approved by a majority of Duke shares outstanding as of the record date which is July 5 for both companies. The share issuance must be approved by a majority of shares voted, provided that total votes cast, including abstentions, represent a majority of outstanding shares.

A majority of Progress shares outstanding as of July 5 must be voted for the deal.

Duke holders are to meet at 10 am at the company's Energy Center in Charlotte. Progress holders are to meet an hour later at the Progress Energy Center for the Performing Arts in Raleigh.

The reverse stock split would likely result in a tripling of the market price per share of Duke stock but the company cautioned that could not be guaranteed.

Required regulatory approvals include the Federal Energy Regulatory Commission, Nuclear Regulatory Commission, North Carolina Utilities Commission, Kentucky and South Carolina Public Service Commissions and Federal Communications Commission.

No approval is needed in Indiana, Ohio or Florida.

The waiting period for the Federal Trade Commission and Department of Justice to raise antitrust objections to the deal expired April 27, but that does not preclude them from raising such objections in the future, the companies noted.

— Paul Carlsen

NEW MINES

Ohio issues, approves new permits for Rosebud and Valley Mining

Rosebud Mining and Valley Mining won regulatory approval from the Ohio Division of Mineral Resources Management in late June for new surface mines in the southeastern part of the state. In addition, the agency issued a final permit to Rosebud for an expansion at its Tusky underground mine.

Approvals were granted for Rosebud's Kaiser-Mathias mine, a 42.3-acre facility in Tuscarawas County. The mine will produce steam coal from the Nos. 5 and 6 seams.

Valley, meanwhile, was approved for the Pickens mine in Belmont and Harrison counties. The mine, covering about 113.4 acres, will extract steam coal from the No. 8 seam.

Jim Barker, a Rosebud vice president, declined to comment on the approvals late last week.

Tusky, in Tuscarawas County, produced 136,256 short tons of coal in the first three months of 2011, Mine Safety and Health Administration figures show, and 603,841 st in

2010. The mine has about 70 employees.

Valley officials could not be reached for comment. The company says on its website it operates six surface mines in southeastern Ohio that produce a total of more than 1 million st annually.

On July 1, Rosebud also applied for an Ohio permit for the Roberto No. 2 surface mine in Stark County.

The Army Corps of Engineers also is seeking comments until August 8 on Rosebud's application for a Section 404 Clean Water Act permit for a 44.5-acre surface mine in Carroll County, Ohio.

Earlier this year, Rosebud closed a deal to purchase Action Mining and Future Industries, operators of the Shaw and JoePa surface mines in Somerset County, Pennsylvania (*PCT 2/11*).

The purchase price was not disclosed.

Action and Future currently produce at the rate of 300,000 to 400,000 short tons annually. It remains unclear if those numbers will change materially under Rosebud's ownership.

In 2010, Action's Shaw complex produced 116,181 st, MSHA figures show. Future's JoePa produced 313,106 st last year.

Based in Kittanning, Pennsylvania, Rosebud operates 20 underground and 16 surface mines along with eight preparation plants in Pennsylvania and Ohio. The company, owned by Pennsylvania coal operator J. Clifford Forrest, typically produces about 6 million st annually.

— Bob Matyi

SUPPLIERS

DEP turns down Blair Mountain petition as 'frivolous'

The West Virginia Department of Environmental Protection has turned down environmental groups' petition to declare 1,668 acres in the state as unsuitable for mining for historical purposes (*CO 6/6*).

The groups' petition was denied as "frivolous," according to a July 5 letter to the Appalachian Center for the Economy and the Environment and the Sierra Club Environmental Law Program signed by Thomas L. Clarke, DEP's director of mining and reclamation. Supporting DEP's finding, Clarke gave detailed examples such as "A significant portion of the lands identified in your petition has been affected in the past and continues to be affected by oil and gas and logging

Genscape Weekly Coal Burn Index *

	This week	Last week	Chg	Year ago	Chg
East	18.23	17.81	2.00%	19.37	-6.00%
West	2.26	2.10	7.00%	2.37	-5.00%
National	20.50	19.80	4.00%	21.33	-4.00%

* For US coal fleet in millions short tons.

operations.” Also, Clarke said that “a significant portion, approximately 494 acres” of the area in question, “is or has been covered by a permit issued after August 3, 1977,” which means the lands are exempt by statute from being declared unsuitable.

“We are weighing options and will continue to pursue protection for Blair Mountain,” Bill Price, organizing representative for the Sierra Club’s Environmental Justice Program and the Beyond Coal to Clean Energy Campaign, said in a July 8 email.

The petition sought to designate the acreage along the crest of Spruce Fork in Logan County as unsuitable for mining because they say it is a historic site of an early 20th century labor battle. Arch Coal and Massey Energy, now a subsidiary of Alpha Natural Resources called Alpha Appalachia Holdings, own coal reserves on Blair Mountain, but the companies have been mum on any mining plans there.

“The battlefield itself is threatened by surface mining, also known as mountaintop removal. There are 11 surface mining permits in all, and which are in various stages of the planning, active, and reclamation process,” the petitioning groups said in a supporting document with the petition. The Appalachian Center and the Sierra Club filed the petition on behalf of Friends of Blair Mountain National Trust for Historic Preservation, Ohio Valley Environmental Coalition, West Virginia Labor History Association and the West Virginia Highlands Conservancy.

In other DEP action regarding coal mining permits:

- The agency is taking comments until July 31 on Roaring Creek Coal’s permit application for a Randolph County deep mine.

DEP said in a July 1 announcement that it had received

an application from the Ellamore, West Virginia-based company for an Article 11/West Virginia National Pollutant Discharge Elimination permit in order to open and operate a haul road and deep mine in the Sewell Seam.

DEP noted “special conditions in this permit,” namely special sampling conditions and special effluent characterization conditions. “An anti-degradation review has been conducted,” the agency said. “Tier 1 protection is afforded because effluent limitations ensure compliance with water quality criteria for all designated uses. If applicable, Tier 2 protection is also afforded because the agency has made a determination that the discharge(s) will not cause significant degradation to the receiving stream(s) for any parameters of concern.”

Comments may be sent to: DEP Regional Office, 105 S. Railroad St., Philippi, WV 26416-1150. Phone 304-457-3219 or fax 304-457-5613.

- DEP also is taking comments until July 27 for an Article 11/West Virginia National Pollutant Discharge Elimination permit from ICG Eastern, Cowen, in order to open and operate the Tioga Surface Mine No. 2 surface mine in the 5-Block, Stockton and Coalburg seams. The operation is to be located 2.52 miles southwest of Tioga in the Beaver and Hamilton districts of Nicholas County.

As with the Roaring Creek permit application, DEP has conducted a two-tiered anti-degradation review.

Comments may be sent to: WVDEP, 254 Industrial Drive, Oak Hill, WV, 25901. Phone: 304-465-1911.

- DEP’s Philippi office also is taking comments until July 17 on an application for an Article 11/NPDES permit from Brushy Fork LLC, Charleston, in order to open and operate a haul road, surface mine, augering, and highwall mine in the Pittsburgh and

Company share prices 2011

	2011 3-Jan	2-Jun	9-Jun	16-Jun	23-Jun	1-Jul	7-Jul	% chng Jan-current
Alliance Resource Partners	\$67.85	\$70.26	\$67.84	\$70.15	\$73.50	\$77.45	\$79.44	14.59%
Alpha Natural Resources	\$61.47	\$51.00	\$46.39	\$42.30	\$43.62	\$45.44	\$46.57	-31.99%
Arch Coal	\$35.60	\$27.43	\$26.20	\$24.59	\$25.88	\$26.66	\$26.66	-33.53%
Cloud Peak Energy	\$23.19	\$20.49	\$19.17	\$19.37	\$19.88	\$21.30	\$21.67	-7.01%
Consol Energy	\$51.17	\$50.16	\$48.94	\$45.90	\$47.61	\$48.48	\$50.90	-0.53%
Hallador Energy Company	\$10.43	\$10.00	\$9.62	\$9.77	\$9.56	\$9.59	\$10.10	-3.27%
James River Coal	\$25.70	\$20.84	\$19.47	\$18.86	\$19.66	\$20.82	\$20.26	-26.85%
Natural Resource Partners	\$34.11	\$31.82	\$30.00	\$30.95	\$31.94	\$33.17	\$34.54	1.24%
Oxford Resource Partners	\$24.38	\$23.70	\$22.22	\$21.86	\$22.94	\$22.99	\$24.20	-0.74%
Patriot Coal	\$20.30	\$22.13	\$20.82	\$19.55	\$21.44	\$21.44	\$23.20	12.50%
Peabody Energy	\$64.52	\$58.47	\$55.24	\$53.57	\$56.93	\$58.91	\$61.24	-5.36%
Penn Virginia Resource Partners	\$28.50	\$25.31	\$24.36	\$24.84	\$25.84	\$26.94	\$27.45	-3.83%
Rhino Resource Partners	\$23.45	\$25.20	\$23.73	\$22.80	\$23.15	\$23.29	\$25.90	9.46%
Walter Energy	\$130.43	\$122.11	\$117.35	\$109.10	\$114.04	\$115.80	\$116.74	-11.73%
Westmoreland Coal	\$11.93	\$17.69	\$17.19	\$18.13	\$18.37	\$17.75	\$18.11	34.12%
Market Vectors Coal ETF	\$48.25	\$48.35	\$46.45	\$44.44	\$45.75	\$47.45	\$48.56	0.64%
Dow Jones Industrials	11,670.75	12,248.55	12,124.36	11,961.52	12,050.00	12,414.34	12,719.49	8.25%
S&P 500	1,271.87	1,312.94	1,289.00	1,267.64	1,283.50	1,320.64	1,353.22	6.01%

Source: New York Stock Exchange

Redstone seams. The permit is located in Barbour County.

As with the above permit applications, DEP has conducted a two-tiered anti-degradation review.

■ DEP also said, in a June 17 notice, that it had received a surface mine application from South Fork Coal, Ashford, to conduct contour mining in the Sewell A and B seams in Greenbrier County.

— Steve Hooks

Peabody Energy wins bid to be apart of a Mongolian coal project

Peabody Energy confirmed that it will be part of a select group of international companies that will participate in the development of the Tavan Tolgoi coking coal reserve in the South Gobi region of Mongolia.

St. Louis, Missouri-based Peabody Energy issued a brief statement on Tuesday confirming its participation in a global energy consortium, selected by the government of Mongolia, to develop the reserve.

With initially proven coal reserves of 6.4 billion metric tons, including 1.8 billion mt of hard coking coal and 4.6 billion mt of thermal coal, the Tavan Tolgoi coalfield is situated 270 kilometers (about 167 miles) from the Sino-Mongolian border.

Wall Street appeared to be bullish on the news, with Peabody stock tracking 2.9% higher to \$61.10/share in mid-afternoon trading on Tuesday. The stock fell to \$60.69/share by close of business.

Investment research firm FBR Capital Markets, in an investor note in late January, suggested that Peabody remains a front-runner for the Tavan Tolgoi project.

At the time, FBR said that Peabody may bid for the project jointly with China's Shenhua Energy or pursue other joint-venture options. On an earnings-per-share view, FBR estimated that the project "could be worth \$5+/share for Peabody's shareholders" (*PCT 1/26*).

According to a government statement, issued on Monday, Mongolia also selected China-based Shenhua Group and a Russian-Mongolian consortium to the joint venture.

Shenhua will be the largest stakeholder in the project with 40%, with the Russian-led consortium exposed to 36%, and Peabody, 24%.

Platts reported that Mongolian premier Sukhbaatar Batbold told Chinese media in June that Mongolia hopes to enter into agreements with China to jointly develop large mining projects. He also noted that he would like to push ahead with Sino-Mongolian cooperation in mining and infrastructure.

The terms of agreement of the joint venture are pending approval by government agencies and parliament.

Peabody declined further comment on the project.

— Chang Noh

TRANSPORTATION

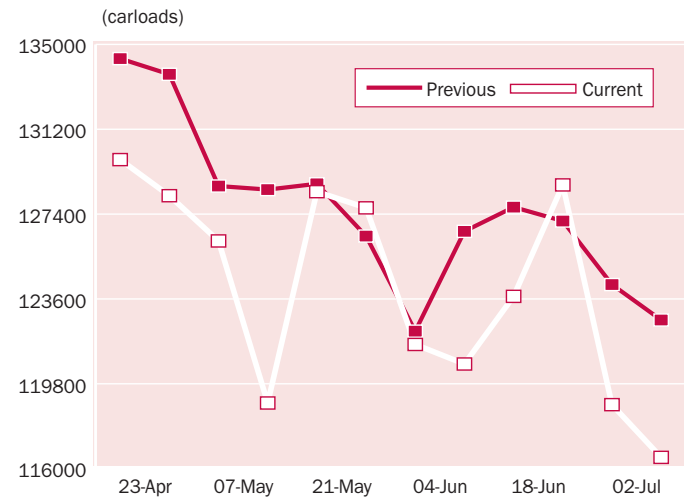
US weekly coal, coke rail carloadings plummet

Despite the Association of American Railroads reporting "solid" growth in overall US rail traffic, coal carloads fell 5% to 116,505 for the week ending July 2, compared with the same week last year.

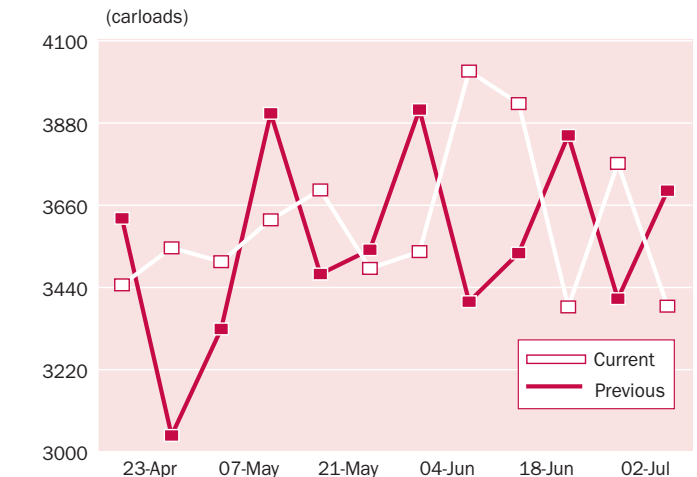
US weekly coke shipments dropped 8.4% to 3,390 carloads, compared with the same week last year. Year-to-date coal carloads, meanwhile, were up 0.6% to 3.3 million, compared with this time last year. Year-to-date coke shipments

Weekly AAR report on traffic

Coal



Coke



dropped 1.4% to 88,603.

BNSF weekly coal shipments were down 21.37% to 34,107 compared with the same week last year, and down 3.33% year-to-date to 1,133,079. BNSF's coke shipments dropped 15.33% to 613 carloads for the week and were up 0.18% year-to-date to 16,568 carloads.

Coal shipments on CSX increased 14.6% to 27,492 carloads, compared with the same week last year, and were down 0.2% year-to-date to 731,782 carloads. Coke shipments declined 25.9% to 804 for the week, compared with the same week last year, while year-to-date they fell 7.0% to 24,630 carloads.

Norfolk Southern's coal shipments fell to 25,619 carloadings for the week, compared with 26,953 for the same week last year. Year-to-date, they rose to 778,480 carloadings, up from 730,061 carloadings this time in 2010. Coke shipments for the week fell to 1,160 carloadings, compared with 1,291 the same week last year. Year-to-date, NS shipped 29,775 coke carloadings, down from 32,209 carloadings this time in 2010.

Union Pacific coal shipments dropped 5% to 37,951 carloads compared with the year-ago week, and year-to-date shipments were up 3% to 1,019,842 carloads. Coke shipments jumped 5% to 576 carloads for the week, compared with the same time last year. Year-to-date coke shipments were up 7% to 13,749 carloads.

— Steve Hooks

EMISSIONS

Incentives for CCS will help get projects off the ground: experts

The high cost of carbon capture and storage technology is one of the biggest hurdles for widespread deployment, and experts say industry and investors need motivation to finance projects.

"The challenges you have with CCS is it is flat-out more expensive than not having it," Tom Wilson, senior program manager for the global climate program at the Electric Power Research Institute, said during a May interview. "A coal plant with CCS is more expensive than a coal plant without CCS."

CCS technology is expected to reduce CO₂ emissions to allow for the continued use of coal in power plants as the nation moves to lower its greenhouse gas emissions. The federal government has invested millions of dollars in research and development and is working to accelerate development through its Clean Coal Power Initiative, carbon sequestration regional projects and other efforts.

"The cost of CCS technologies is not just an incremental line item. It is substantial," Mike McCormick, CCS fellow at the Pew Center for Global Climate Change, said last month.

American Electric Power's plans to scale up its 20-MW

CCS demonstration project at its Mountaineer facility in New Haven, West Virginia to 235 MW could cost as much as \$668 million. The Department of Energy has committed to paying 50% of the cost, up to \$334 million. AEP also received about \$4 million from The Global CCS Institute in Canberra, Australia, to support the initial engineering and characterization of the commercial-scale system.

Experts say financial incentives can go a long way to encourage the development and construction of commercial-scale projects.

"The type of incentive can actually make quite a difference," Stu Dalton, director of generation at EPRI, said during a May interview. "And how much it takes to close that gap is huge."

Dalton pointed to Mississippi Power's integrated gasification combined cycle plant in Kemper County as an example of how much it takes to get a clean coal project moving forward.

The \$2.4 billion capital investment will be paid for through a mix of equity, debt, bonds, tax credits and grants, Verdell Hawkins, community affairs manager for the project, said in an email. About \$412 million will come from investment tax credits, he said. The project also received a \$270 million grant from the Department of Energy.

"Financial incentives are helpful and assist with relieving project costs; however, the success of the project is not closely linked with any particular incentive," Hawkins said.

The 582-MW power plant will capture 65% of its CO₂ emissions, which will be used in enhanced oil recovery, according to information on the company's website. Mississippi Power is a subsidiary of Southern Company.

"It's a good example of the difficulty in securing funding," Dalton said. "Because right now there is no driver in the US."

Legislation cleared the Senate Energy and Natural Resources Committee at the end of May that would create a national program under DOE for up to 10 commercial-scale carbon geologic storage demonstration projects. The energy secretary would be able to distribute up to \$10 million each fiscal year until 2020 for projects that would be competitively selected. The bill also sets a framework for the long-term maintenance of geologic storage (*PCT 5/27*).

A price on carbon needed

Experts say the biggest push for CCS will come when there is a price on carbon.

An EPRI analysis from 2010 looked at different financial incentives and also looked at how possible federal legislation putting a price on carbon could impact them. The analysis, presented last year, evaluated three price paths, each increasing by 5% annually. The first started at \$15/ton of CO₂, the second at \$30/ton and the third at \$60/ton. The analysis found that even at \$30/ton, there would be a need for incentives, but the need for incentives goes away when the initial carbon prices is \$60/ton, increasing over time.

"The solution begins with a federal climate change policy, that is the primary incentive that is required for wide-

scale deployment,” McCormick said. “That’s the reason to capture carbon. Until there is a cost associated with putting CO₂ in the atmosphere, there is not going to be momentum to mitigate CO₂.”

Wilson said addressing the climate issue is the “starting point” for CCS.

“Incentives are particularly important to get test projects going. They are not a long-term strategy,” he said.

— *Beth Ward*

CCS bill would boost funding for storage projects

A bill to encourage development of carbon storage would increase funding for projects by about \$68 million over four years, but the liability obligations could impact the budget in later years, according to an analysis by the Congressional Budget Office released Thursday.

The Department of Energy Carbon Capture and Sequestration Program Amendments Act of 2011 (S. 699), which cleared the Senate Energy and Natural Resources Committee in May, would create a national program to build up to 10 commercial-scale carbon sequestration projects. The projects would be competitively selected based on a set of criteria that includes site selection, monitoring and ownership of land interests (*PCT 5/27*).

According to the CBO analysis, projects that have received funding from existing DOE carbon storage programs could be eligible for the new program. The Energy Policy Act of 2005 authorized appropriations for a research, development and demonstration program for carbon sequestration through 2015.

“S. 699 would effectively extend the existing authorization of appropriations to support carbon sequestration projects beyond the scheduled expiration in 2015,” CBO said in the report.

CBO’s estimates assume that funding levels remain at the same levels as they have in recent years. There are other variables at play that could also impact the financial implications of the bill.

“The CBO estimate of discretionary spending increases of \$68 million through 2016 is contingent upon the bill being enacted and money being appropriated ... neither are certain and, furthermore, even if it’s enacted the administration has significantly reduced their budget requests for CCS recently since there is still so much money for that purpose at DOE left over from the stimulus,” Robert Dillon, spokesman for Republican Senator Lisa Murkowski of Alaska, said in a Thursday email. Murkowski is a cosponsor of the bill and ranking member of the ENR Committee. Dillon added that the senator supports CCS and addressing the issues of long-term liability.

CCS technology is expected reduce CO₂ emissions to allow for the continued use of coal in power plants as the

nation moves to lower its greenhouse gas emissions. But industry says that there are still funding, liability and technical issues that are preventing commercial-scale projects from getting off the ground (*PCT 5/4, 5/9*).

Sponsors of the bill have said one of the goals of the legislation is to address some of the liability concerns. S. 699 was introduced by Murkowski, New Mexico Democrat Jeff Bingaman, committee chairman; West Virginia Democrat Jay Rockefeller; and Wyoming Republican John Barrasso. Democrats Jon Tester of Montana and Mark Udall of Colorado and Republican John Hoeven of North Dakota are cosponsors.

CBO sees 7 indemnification pacts by 2021

As part of the legislation, the energy secretary would also be able to enter into indemnification agreements for personal, property and environmental damages that may be above what is covered by insurance, and to collect fees for the indemnification. The total amount of indemnification authorized would be \$10 billion per project (*PCT 5/13*).

As part of the agreements, project developers would pay a fee over the operating life of the project, based on the volume of CO₂ injected each year.

“Setting a price for such fees would be difficult because agencies and industry lack experience with large-scale geologic storage systems,” CBO said.

CBO cited analyst estimates that the value of financial risks through the operational and post-injection period may be less than 20 cents per ton of CO₂. But CBO expects DOE to initially set rates below that rate because the estimated risks are associated with operations and not long-term storage. There is also the possibility that firms would not pursue federal indemnification if the fee is considered disproportionate to the expected risk, CBO said.

Based on DOE’s current program, CBO estimates the agency would finalize seven indemnification agreements by 2021. Since most of the facilities would begin injections after 2015 with very low volumes of CO₂, CBO does not expect a significant impact on the budget between 2012 and 2021. But the agreements will likely have an impact on the cost for DOE’s stewardship and regulatory activities after that period, CBO said.

“While routine monitoring and management expenses probably would average less than \$5 million a year per site, the cost of any remediation activities is unknown,” CBO said.

The budgetary impact of the program would depend on the fees collected and the amount of any payments that would be made, CBO said.

Under the bill, the energy secretary could distribute up to \$10 million for each fiscal year from 2010 to 2020 for a grant program to states and tribal employees for training related to permitting, inspections and oversight of CCS projects. The bill eliminates a university-based CCS research grant program that was authorized but never funded in order to offset the cost (*PCT 5/27*).

— *Beth Ward*

INTERNATIONAL NEWS

Jorf Lasfar awards Q3-Q4 steam coal tender at around \$124/mt

Moroccan generator Jorf Lasfar Energy Company awarded its tender to buy 180,000 mt of steam coal for Q3-Q4 2011 delivery “in the region of \$124/mt,” according to a market source close to the matter Thursday, July 7, following previous suggestions that the price had settled at or below \$127/mt Wednesday, July 6.

A Northwest European utility and Australian bank were understood to have won the tender to supply the volumes, with a second source suggesting that the tender would be partially supplied with US high-sulfur coal.

Bidders had originally hoped that the tender would settle closer to \$128/mt, although a utility source noted that weak values seen recently in the Richards Bay, South Africa FOB market were likely to have a bearish impact on price expectations.

This followed an August Richards Bay trade via the global COAL screen Wednesday, given at \$116.50/mt for 50,000 mt, with one trader noting that the weak premiums previously seen in July appeared to be rolling forward into August.

JLEC sought three Panamax in the Q3-Q4 tender, with maximum 1.5% sulfur and calorific value of 5,800-7,000 kcal/kg. The cargoes were requested for September, October and November delivery, with the deadline for submission of bids closing Monday. Price offers remained valid until Wednesday.

Platts reported previously that JLEC had awarded a tender for 180,000 mt of 6,000 kcal/kg NAR steam coal for August, September and October delivery in a range of \$125-127/mt CIF Jorf Lasfar.

JLEC regularly tenders for spot shipments for its coal-fired plant, which has an installed capacity of 1,372 MW, providing around one third of Morocco’s electricity supply.

— *Mark Selby*

Korea protests Tavan Tolgoi bidding process as “unclear and unfair”

South Korea’s Ministry of Knowledge Economy (MKE) has described the bidding process involving Mongolia’s Tavan Tolgoi coking and thermal coal mine as “unclear” and “unfair,” an MKE statement said.

The statement, issued in the Korean language, said MKE will explore the possibility of clarifying with Mongolian authorities the Tavan Tolgoi bidding process which it said was not transparent or fair.

MKE said in the statement, which was not dated but which was apparently issued on July 4, that Mongolian authorities identified in March six preferred bidders for the

Tavan Tolgoi project: a Korean-Japanese-Russian consortium, a tie-up of China Shenhua and Japan’s Mitsui, Peabody Energy, ArcelorMittal, Vale and Xstrata.

The Korean-Japanese-Russian consortium involved Korean firms Korea Resources Corp. (Kores), Posco, Kepco, LG Corp., Daewoo International, STX, Keong Nam Corp.; Japanese firms Sumitomo, Itochu, Sojitz, Marubeni; and Russia National Railway Co. and SUEK of Russia, MKE said.

In April, Mongolian authorities asked the six preferred bidders to form a “grand consortium” for the Tavan Tolgoi project. ArcelorMittal was not included in the subsequent talks to form the “grand” consortium, MKE said.

It said the Mongolian government announced on July 4 that the winning bidders included Shenhua, which will have a 40% stake, Peabody a 24% share, with the remaining 36% held by a Russian-Mongolian consortium.

MKE said Mongolia announced the names of the winning bidders even while talks regarding the formation of the “grand consortium” was still ongoing, adding that no consultation was made with the bidders before it announced the winners for the “final development” of the Tavan Tolgoi project.

Russia-Mongolia consortium not a preferred bidder: MKE

MKE said the Russia-Mongolia consortium which bagged the 36% stake was not in the original list of the six preferred bidders and was different from those involved in the Korea-Japan-Russia consortium which was one of the original six preferred bidders.

It said an MKE official flew to Mongolia on June 30 and met with officials of Mongolia’s ministry of natural resources and energy to inquire about when Mongolia will decide about the Tavan Tolgoi project award.

MKE said the Mongolian energy and natural resources authorities informed the visiting MKE official that the Mongolian government will internally discuss the issue in July and consult its parliament during the autumn.

MKE said its official had been informed by resources and energy authorities of Mongolia, a country locked in by China and Russia, that they cannot simply disregard the Chinese and the Russians in their evaluation of the winning bidders for the Tavan Tolgoi project.

MKE said it and Korea Resource Corp. (Kores) will inquire about the composition of the Russia-Mongolia consortium and investigate the reasons for the abrupt project award decision.

MKE and Kores, along with its Japanese partners in the consortium, will then pursue discussions with the Mongolian government, MKE said.

MKE said the Tavan Tolgoi project will involve investments of \$7.3 billion, of which \$1 billion will be spent on mine development and \$6.3 billion for railway construction and other related infrastructure, including a 600 MW power plant, a dimethyl ether plant and coke ovens.

The Tavan Tolgoi coal field is located 270 km from the Chinese border and houses 6.4 billion mt of coal, including around 1.8 billion mt of coking coal and 4.6 billion mt of thermal coal.

— *Cecilia Quiambao*

Australian coal industry rails against carbon tax price of \$24.60/mt: reports

The price for the Australian government's carbon tax began to leak out in media reports July 7, with newspapers speculating authoritatively that the tax might start at A\$23/mt (\$24.60/mt) in July 2012 and apply to 500 of Australia's largest carbon-emitting businesses such as power stations and coal mines.

Australia's Prime Minister, Julia Gillard is due to reveal the finer points of the government's carbon tax including its price on July 10, however detailed reports setting out the scope and price of the tax have started to appear in the Australian press this week.

The Prime Minister declined to answer questions on the level of the carbon tax ahead of the government's official announcement on July 10, according to a transcript of a radio interview posted on the Australian Prime Minister's website.

Queensland Resources Council chief executive, Michael Roche, said July 7 that sentiment among chief executives of its coal and resource company members had plunged to record negative levels in June, and he blamed much of this on the proposed carbon tax.

Roche referred to research carried out for the coal industry by ACIL Tasman which showed that a carbon tax set at A\$20/mt and rising to achieve a 5% reduction in carbon emissions by 2020 would cause "premature mine closures" among Queensland's 41 current coal-mining operations.

"By 2017-18 it is estimated that 2,700 Queensland coal workers would be out of a job, with total job losses of more than 13,000 after taking account of the flow-on impacts to people who rely on the coal industry for their livelihood," Roche said in a statement on the QRC's website.

Anglo American, BHP Billiton, US based Peabody Energy, Rio Tinto and Xstrata are some of the companies that belong to the QRC.

Tax could 'close 18 NSW, Queensland mines'

Ralph Hillman, executive director of the Australian Coal Association told a press gathering in Canberra, July 6 that his industry group supported a price on carbon in principle as a means of reducing carbon emissions, but it would contest the level of the tax.

"The coal industry is faced with an A\$18 billion tax over nine years under the government's current proposal. This tax will raise the cost of Australian coal mining vis-a-vis its overseas competitors and ultimately lead to premature mine closures and the loss of thousands of jobs," said Hillman in

a transcript of his July 6 speech on the ACA's website.

The ACIL Tasman research report said a carbon tax starting at A\$20/mt in 2012 and indexed to rise at 4% per year could put at risk of premature closure 18 coal mines in New South Wales and Queensland by 2020, resulting in 4,700 job losses and A\$22 billion of lost revenue.

There are currently 67 operating coal mines in New South Wales and 62 in Queensland, or 129 in total, employing 46,600 people and these mines produced 345 million mt of saleable coal in the year ended June 2010, according to the ACIL Tasman report.

Coal mines in Australia will have to pay the carbon tax on 'fugitive emissions', that is carbon dioxide and other gases that are released during the coal-mining process.

Fugitive emissions from coal mines represented about 5 to 6% of Australia's total greenhouse gas emissions, compared with methane emissions from livestock at 11%, Hillman stated in his speech.

Chief executives of some of Australia's largest coal producers had told the government there was almost no way to abate fugitive gas emissions from coal mines except to close them.

Hillman emphasized the enormous contribution of Australia's coal industry to the national economy, saying that it exported A\$46 billion worth of coal exports in the year to June 2011, employed 40,000 people directly, and an additional 100,000 people indirectly.

Coal companies also paid A\$8.4 billion in taxes and A\$4.5 billion in coal royalties to Australian federal and state governments, added Hillman.

— *Mike Cooper*

EPRI ... from page 1

Now, as a result of new EPA regulations targeting power plants in the 2014-2015 timeframe, early industry analyses predict up to 70 GW of coal-fired generation will be shuttered, though EPA forecasts only about 10 GW of aging, "unscrubbed" coal generation will be closed. EPRI plans to offer its own estimate in its new Prism model.

Much, however, will depend on state requirements and the work utilities have already undertaken to reduce emissions at their coal units, Howard said.

"Every single utility out there will have to do an economic analysis to see do I hold or do I fold? Do I invest or not?" said Howard. "It is a very difficult question to answer."

It is also hard to determine the real impact these rules will have on grid reliability, unless load flow analyses are conducted using various configurations, according to Howard. Regional transmission organizations as well as the North American Electric Reliability Corp. are taking on such studies.

In the end, reliability of a low-emission portfolio depends on the design of the power system, he said. While one area could incorporate a 20% injection of renewable

resources, that fuel mix could be problematic for reliability in another region.

"You cannot make a general statement on reliability," Howard said. "That is why we haven't."

Compliance costs to vary, coal usage will drop

Howard noted that there also is a lot of variability in deciding compliance costs for meeting EPA rules for cleaner power.

Whether plants have enough land to build scrubbers, baghouses and other cleanup equipment, the cost of replacement power for generation that is offline for retrofitting, how a power plant can best reduce its cooling water use: All will influence a utility's ultimate cost of compliance.

EPA has projected that it will cost utilities \$10.9 billion a year just to meet its mercury and air toxics standards that are set to go final in November. EPRI may offer its own estimate when it rolls out the new Prism model in early August.

"In looking at the future generation mix, there will be a reduction in the amount of coal that is generated and an increase in the amount of electricity generated from natural gas," Howard said. "That is clearly the direction we're going. The question is how much coal will be impacted and how much natural gas will be increased as a result? Those are two very big questions."

Technology will be a key factor

But as far as technical solutions are concerned, Howard says, EPRI's got that. The organization is entering its 40th year working with the Department of Energy and the power sector to come up with technological answers to emerging resource challenges.

"Our focus has been on helping to develop the technology to make it more economical to continue making coal part of our generation mix along with other generating sources, including renewables," Howard said. "We know how to do this."

The challenge includes addressing the technical matters that go with adding more intermittent renewables to the grid — asking power plants to ramp up and down to follow load and incorporate wind and solar. Such cycling operations can reduce units' efficiency.

To get at that problem, EPRI has a project looking at the cycling of the entire fossil fleet. Pumped storage hydro and compressed air energy storage can help reduce this activity and wear and tear on power plants that erodes their efficiency.

"One of the options is if we had energy storage that could be a shock absorber for the system, but you're going to have to have a tremendous amount of energy storage," Howard said.

A lot of utilities are looking at adding storage, but access to pumped hydro and compressed air can be an issue for some, based on their location. Thus an electric chemical battery is expected to emerge as a viable solution in about 20 years, he said. Battery technologies will eventually move down from the bulk system to distribution substations with large energy storage systems, Howard suggested, and storage

at substations could be used to defer transmission upgrades or additions and help level off peak load.

"I think that is a very solid projection of where things can go," he said. "A lot of technology has to be developed. We're saying 2030."

Storage would be an expensive option, but when compared with building new transmission, it can be installed a lot quicker, he said. "It's probably at a point now where at least utilities would say, 'Let's at least think about that.' That was not something that occurred 10 years ago."

— Cathy Cash

Market in Review ... from page 1

was assessed at \$82.05/st, down 50 cents/st.

Separately, the CAPP barge August contract closed at \$77.25/st, down 25 cents/st.

The Q4 2011 strip was assessed at \$77.50/st, a decrease of 25 cents/st.

The Cal 2012 package was assessed at \$81.75/st, down 55 cents/st.

PRB 8,800 trades up

Trading activity picked up in decent volume on Tuesday, July 5, recouping some, if not all, of its losses from Friday.

In the CAPP barge market, no trades were seen at the front of the curve, though bids and offers appeared to have firmed from Friday's close. One source said that there were signs of physical demand in the market, though action was limited following a long holiday weekend.

The August contract was assessed at \$77.75/st, up 50 cents/st. Further out, most of the trading activity involved the Q4 2011 strip, which traded in a narrow range of \$78.25-\$78.50/st, totaling 50 barges. The contract was assessed at \$78.25/st, up 75 cents/st.

Q2 2012 traded at \$81.50/st for five barges, up 50 cents/st.

Elsewhere, CSX August physical traded at \$79.25/st for one train. The term was assessed at this price, up 25 cents/st. In the outer terms, CSX financial Q1 2012 traded at \$80.50/st before transacting lower at \$80.25/st. The physical price was assessed at \$80.50/st, up 50 cents/st.

The Q4 2011 contract was assessed at \$79.25/st, up 75 cents/st, based partly on spread relationships.

Norfolk Southern 1%-sulfur over CSX physical Q4 2011 traded at a premium of \$2.75/st for two trains.

Norfolk Southern 1%-sulfur Q4 2011 traded at \$82.50/st for one train.

Separately, trades were seen in the Powder River Basin 8,800-Btu/lb spec at both ends of the curve.

PRB August physical was confirmed to have traded at \$13.75/st for one train and heard to have traded at the same price for an additional three trains. Platts assessed the term at this price, up 35 cents/st.

PRB financial Cal 2012 traded at \$15.05/st for 5,000 st and at \$15.15/st for 5,000 st. Assuming no spread between the swap and the physical contract, the package was assessed at \$15.15/st, up 20 cents/st.

CAPP follows natural gas down midweek

The noticeable slide in natural gas prices on Wednesday, July 6, appeared to weigh on CAPP prices in the session. The NYMEX August natural gas futures contract shed 14.6 cents, or 3.3%, to \$4.217/MMBtu, ahead of the weekly gas storage report. Normal temperature forecasts were another negative factor, one source said.

Losses were mostly at the front of the CAPP forward curve. Based on heard bids and offers, the August and September barge contracts were assessed at \$77.35/st, down 40 cent/st.

The Q4 2011 strip traded at \$77.50/st and at \$77.75/st, each for five barges. The term was assessed at \$77.75/st, down 50 cents/st.

Q1 2012 traded at \$79.25/st for five barges, down 25 cents/st on the day.

In the CSX market, the August swap traded at \$78/st for a total of 55,000 st. Platts assessed the physical price at \$78.40/st, down 85 cents/st.

The September swap traded at \$78/st for 40,000 st. The physical price was assessed at \$78.40/st, down 85 cents/st.

Further out, the premium over the swap product seemed to have widened, contributing to narrower losses at the back of the curve. CSX financial Q1 2012 traded at \$79.75/st for 5,000 st. The physical price was assessed at \$80.15/st, down 35 cents/st.

Separately, one trade was seen for the PRB 8,800 spec. The Cal 2012 swap traded at \$15.10/st for 10,000 st, down 5 cents/st. Prices remained unchanged at the front of the curve. The August contract stood at \$13.75/st.

Trading volumes rise again, prices mixed

Trading volumes picked up to more normal levels on Thursday, July 7, though prices were little changed at the close.

Volatility in the broader energy complex did not seem to impact the CAPP market in the session. The NYMEX August natural gas futures contract settled nearly 2% lower to \$4.133/MMBtu. The nearby crude futures settled at \$98.67/barrel, up 2.1%.

In the CAPP barge market, the August contract traded at \$77.50/st, up 15 cents/st. No August trades were seen in the previous session.

Q4 2011 traded at \$77.75/st for five barges twice, unchanged on the day.

Further out, deferred contracts appeared to exhibit a relatively greater amount of volatility. Q2 2012 traded at \$81.25/st for five barges. The term was assessed at \$81/st, down 25 cents/st.

Spread trades were also seen in good volume, including Q4 2011 over Q1 2012 trading at a discount of \$1.25/st for 20 barges and five barges. The spread also traded at a discount of \$1.75/st for five barges.

Q2 2012 over Q3 2012 traded at a discount of \$1.75/st for five barges and 15 barges.

The Cal 2012 package was assessed at \$81.85/st, up 5 cents/st.

In the CSX market, the August contract was assessed at \$78.50/st, up 10 cents/st, based on broker bids and offers.

The September swap traded at \$78.25/st and at \$78/st. The physical price was assessed at \$78.50/st, up 10 cents/st.

CSX financial Cal 2012 traded at \$81.75/st for 5,000 st twice and at \$81.50/st for 5,000 st three times. The Cal 2012 package was assessed at \$82.30/st, an increase of 10 cents/st.

In the West, PRB 8,800 August physical traded at \$14/st for two trains, up 25 cents/st.

PRB 8,800 financial Cal 2012 traded at \$15.25/st for 5,000 st twice and at \$15.35/st for 5,000 st. The Cal 2012 package was assessed at \$15.35/st, up 25 cents/st.

PRB 8,800 physical ex-Black Thunder Cal 2012 traded at \$15.60/st for one train.

In the four-day trading period, the PRB 8,800 August contract rose 60 cents, or 4.5%, to \$14/st. The Cal 2012 package rose 2.7% to \$15.35/st.

— Chang Noh

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Coal Outlook is published 51 times yearly by Platts, a division of The McGraw-Hill Companies. Registered office: Two Penn Plaza, 25th Floor, New York, NY 10121-2298

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