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# **Argus** *Air Daily*

Issue 21-8 | Monday 13 January 2014

#### **LATEST NEWS**

## RGGI states cut allowance budget for 2014

This year's  $\mathrm{CO}_2$  budget for the Regional Greenhouse Gas Initiative (RGGI) will be cut to 82.8mn short tons, after the participating states adjusted the level to account for the outstanding bank of allowances.

The RGGI states today announced the first of two interim budget adjustments to help draw down the bank. The first adjustment cuts the budget by 8.2mn st/yr for 2014-2020, a cumulative reduction of nearly 57.5mn st, to account for the bank of vintage 2009-11 allowances.

The cut is in addition to the 45pc reduction that took effect this year as part of the package of program revisions that the RGGI states agreed to in 2013, which took the base budget down to 91mn st. The base budget will be cut by 2.5pc/yr from 2015-2020 not including the interim adjustments.

The next interim adjustment, to account for 2012-2013 allowances, will be announced by 17 March. It will affect the 2015-2020 budgets.

#### **CONTENTS**

RGGI  $\mathrm{CO}_2$  allowances inch higher Washington state readies refinery GHG rule California regulators launch  $\mathrm{CO}_2$  exchange US  $\mathrm{CO}_2$  emissions inch higher in 2013 Q&A - 2014 key year for global climate talks

California carbon allowances \$,					
Vintage	Delivery	Bid	Ask	Price	±
2014	Dec 14	11.90	12.10	12.00	0.00
2015	Dec 15	12.10	12.50	12.30	0.00
	olume weight			V/W/A	\$/t
Vintage	Delivery	Low	High	VWA	MTD
2014	Dec 14	na	na	na	12.00
Vintage	Delivery	Trades	MTD	Volume	MTD
2014	Dec 14	0	4	0	2,027,000

#### **KEY MARKET PRICES**

REC market pri	ices				\$/MWh
	Vintage	Bid	Ask	Price	±
Massachusetts					
Class I	2013	63.50	65.50	64.50	0.00
Class I	2014	62.00	63.00	62.50	0.00
Solar	2013	255.00	265.00	260.00	0.00
Connecticut					
Class I	2013	54.00	55.00	54.50	0.00
Class I	2014	51.00	53.00	52.00	0.00
Class II	2013	0.35	0.65	0.50	0.00
Class II	2014	0.40	0.75	0.58	0.00
Class III	2013	10.00	10.50	10.25	0.00
Class III	2014	15.00	19.00	17.00	0.00
New Jersey					
Class I	2014	17.00	17.50	17.25	+0.25
Class I	2015	17.00	17.50	17.25	+0.25
Class II	2014	5.00	5.50	5.25	0.00
Class II	2015	4.00	6.50	5.25	0.00
Solar	2014	175.00	180.00	177.50	0.00
Solar	2015	175.00	185.00	180.00	0.00
Pennsylvania					
Tier I	2014	16.80	17.50	17.15	+0.20
Solar	2014	45.00	55.00	50.00	0.00
Maryland					
Tier I	2013	16.70	17.50	17.10	+0.20
Ohio					
In-state, non-solar	2013	15.00	17.50	16.25	0.00
California					
Category 3	2013	1.00	1.40	1.20	0.00
Texas					
Compliance	2013	1.05	1.15	1.10	0.00
National Green-e (v	oluntary)				
Wind	2H13	1.00	1.10	1.05	-0.10
Wind	1H14	1.05	1.15	1.10	-0.10
WECC Green-e (volu	ıntary)				
Wind	2H13	1.05	1.25	1.15	-0.15
Wind	1H14	1.10	1.30	1.20	-0.20

Clean Air Interstate Rule (CAIR) allowances							
Vintage	Vintage	Bid	Ask	Price	±		
SO <sub>2</sub> \$/allowance							
Acid Rain Program	2009 (Pre-CAIR)	1.05	1.75	1.40	0.00		
Acid Rain Program	2013	0.45	0.85	0.65	0.00		
NOx \$/st							
Annual	2013	42.00	46.00	44.00	0.00		
Seasonal	2014	18.00	22.00	20.00	0.00		

RGGI also released its notice for the 5 March auction, when member states will offer 18.6mn  $\rm CO_2$  allowances, with a reserve price of \$2/st. There will also be a 5mn st allowance cost-containment reserve available at the auction, which can be accessed if the interim clearing price exceeds \$4/st.

#### MARKET SUMMARY

## RGGI CO<sub>2</sub> allowances inch higher

Regional Greenhouse Gas Initiative (RGGI)  $CO_2$  allowances picked up 2-3¢ in light trading as a decision by the participating states to cut this year's budget by 8.2mn short tons had little immediate effect on the market.

The December-delivery contract traded twice on the IntercontinentalExchange (ICE) at \$3.55/st for a total of 275,000 allowances. The January contract traded twice at \$3.48 and three times at \$3.50/st for a total of 900,000 allowances. The December contract closed at \$3.55/st, up by  $3\mathfrak{e}$  from last week, while the spot price ended the day at \$3.50/st, up by  $2\mathfrak{e}$ .

The RGGI states today announced they would cut the 2014-2020 budgets by 8.2mn st/yr to account for the bank of 2009-2011 allowances. That means this year's effective cap is down to 82.8mn st from 91mn st.

New Jersey solar renewable energy certificates (SRECs) traded on ICE at \$175/MWh for 250 SRECs for energy year 2013. An over-the-counter deal was heard for New Jersey 2014 SRECs at \$177.50/MWh for an undisclosed volume, but the deal was not confirmed. Energy year 2014 SRECs closed at \$177.50/MWh, flat with the end of last week.

PJM top-tier RECs for 2014 were heard to trade over the counter at \$17.25/MWh for 25,000 RECs. New Jersey Class I RECs for 2014 were heard to trade at \$17.50/MWh, but both deals were unconfirmed.

SO <sub>2</sub> allowance transfers, 10 Jan st					
Transferor	Transferee	Vintage	Tons	Туре	
EPA reported no tra	ansfers for today				
See methodology a	t end of report.				

Seasonal NOx allowance transfers, 10 Jan					
Transferor	Transferee	Vintage	Tons	Туре	
EPA reported no transfers for today					
See methodology a	t end of report.				

Annual NOx allowance transfers, 10 Jan					
Transferor	Transferee	Vintage	Tons	Туре	
Ameren	Entergy	2013	301	CAIR	
Ameren	Entergy	2013	920	CAIR	
Ameren	Entergy	2013	178	CAIR	
See methodology at end of report.					

RECs deals done						
Date	Туре	Transaction	Vintage	Volume <i>MWh</i>	Price \$	
10 Jan	NJ solar	Trade	2015	1,000	175.00	
13 Jan	NJ Solar (ICE)	Future (Jan 14)	2013	250	175.00	
13 Jan	CT Class I	Future (Apr 14)	2013	10,000	54.50	
13 Jan	National green-e wind	Trade	BH 2013	40,000	1.05	
13 Jan	MA Class I (ICE)	Future (May 16)	2015	2,500	52.50	
13 Jan	MA Class I (ICE)	Future (May 16)	2015	5,000	52.50	

Califo	California deals done						
Date	Туре	Transaction	Vintage	Volume <i>mt</i>	Price \$		
13 Jan	CCA (ICE)	Future (Dec 15)	2016	50,000	12.50		
13 Jan	CCA (ICE)	Future (Dec 15)	2016	50,000	12.50		
13 Jan	CCA (ICE)	Future (Dec 14)	2013	1,000	12.00		
13 Jan	CCA (ICE)	Future (Jan 14)	2013	20,000	11.70		
13 Jan	CCA (ICE)	Future (Jan 14)	2013	25,000	11.72		
13 Jan	CCA (ICE)	Future (Jan 14)	2013	25,000	11.75		
13 Jan	CCA (ICE)	Future (Jan 14)	2013	25,000	11.75		
13 Jan	CCA (ICE)	Future (Jan 14)	2013	3,000	11.80		

RGGI o	RGGI deals done						
Date	Туре	Transaction	Vintage	Volume st	Price \$		
13 Jan	RGGI (ICE)	Future (Dec 14)	2014	100,000	\$3.55		
13 Jan	RGGI (ICE)	Future (Jan 14)	2014	100,000	\$3.48		
13 Jan	RGGI (ICE)	Future (Jan 14)	2014	50,000	\$3.48		
13 Jan	RGGI (ICE)	Future (Dec 14)	2014	175,000	\$3.55		
13 Jan	RGGI (ICE)	Future (Jan 14)	2014	100,000	\$3.50		
13 Jan	RGGI (ICE)	Future (Jan 14)	2014	250,000	\$3.50		
13 Jan	RGGI (ICE)	Future (Jan 14)	2014	250,000	\$3.50		
13 Jan	RGGI (ICE)	Future (Jan 14)	2014	150,000	\$3.50		

#### CO<sub>2</sub> ASSESSMENTS

RGGI CO2 allowances					\$/st
Vintage	Delivery	Bid	Ask	Price	±
2012-14	Spot	3.45	3.55	3.50	+0.02
2012-14	Dec 14	3.50	3.60	3.55	+0.03

RGGI CO2 volume weighted averages					\$/st
Vintage	Delivery	Low	High	VWA	MTD
2012-14	Dec 14	3.55	3.55	3.55	3.54

CER (secondary) €/t CO2					/t CO2e
	Delivery	Bid	Ask	Price	±
CER	Dec 14	0.29	0.39	0.34	0.01
EUA-CER spread	Dec 14			4.37	0.11



National Green-e RECs for the back-half of 2013 traded for \$1.05/MWh over the counter. National Green-e wind RECs for 2013 closed at that level, down by 10¢ from last week.

California Carbon Allowance (CCA) prices were unchanged with future vintages accounting for about half of today's volume.

Several spot deals changed hands on ICE in the \$11.70-11.80/metric tonne range. Vintage 2016 CCAs for delivery in December 2015 traded at \$12.50/t for a total of 100,000 allowances. Vintage 2014 allowances for delivery in December 2014 closed flat at \$12/t.

#### **NEWS**

## Washington state readies refinery GHG rule

Washington state environmental regulators are working to enact greenhouse gas (GHG) emissions limits for petroleum refineries by this spring.

The Washington Department of Ecology will hold a public meeting on 22 January to discuss the regulation. The agency expects to complete the rule by the end of April 2014.

The regulation would require petroleum refineries to use reasonably available control technology to limit GHG emissions. The technology must allow the refineries to achieve energy efficiency that would put them in the top half of similar US refineries.

A refinery that does not meet the energy efficiency standard must implement GHG emission reduction projects. These projects must cut emissions by 10pc below 2010 levels over 10 years.

The department is implementing the rule as a result of a 2012 court decision that required the agency to determine reasonably available control technology for limiting GHG emissions at refineries by May 2014.

The court decision resulted from a 2011 lawsuit filed by two environmental groups - the Washington Environmental Council and the Sierra Club - against the state Department of

## GAS-IMPLIED, CARBON-ADJUSTED SPARK SPREADS

Adjusted heat rates and carbon cost							
	NP15		SP15				
Marginal unit	Heat rate mnBtu/ MWh	Carbon cost \$/MWh	Heat rate mnBtu/ MWh	Carbon cost \$/MWh			
Gas-implied	10.615	6.77	11.047	7.05			
Carbon-adjusted	9.290	5.93	9.633	6.15			
Western grid electric exports							
Bonneville Power Administration exports							
Powerex electric exports							

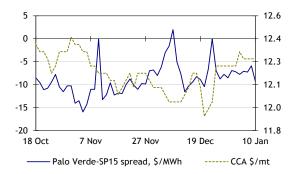
Adjusted spark spreads \$				
Heat rate	7	8	10	12
NP15				
Gas-implied	16.18	11.70	2.75	-6.20
Carbon-adjusted	11.71	6.60	-3.63	-13.86
Carbon cost	4.47	5.10	6.38	7.66
SP15				
Gas-implied	17.59	13.24	4.55	-4.14
Carbon-adjusted	13.12	8.14	-1.83	-11.80
Carbon cost	4.47	5.10	6.38	7.66

The data display the spread of fuel and carbon costs of running a power plant compared with the power price at NP15 and SP15, along with the carbon cost per heat-rate and for unspecified power imports. Data for SP15 uses the day-ahead power price at SP15 and the day-ahead gas price at SoCal. Data for NP15 uses the day-ahead power price at NP15 and the day-ahead gas price at PG&E Citygates. Both use the assessed December 2013-Delivery CCA price for carbon costs. For more information about this data, please contact airdaily@ argusmedia.com or +1 (202) 775-0240.

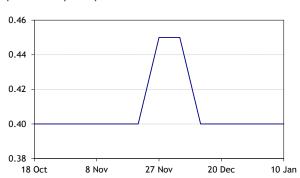
Associated day-ahead power and natural gas markets					
	Mid	±			
Power NP15 peak price \$/MWh	47.50	+1.25			
Power NP15 off-peak price \$/MWh	40.00	0.00			
Power SP15 peak price \$/MWh	48.00	+1.25			
Power SP15 off-peak price \$/MWh	39.75	-1.25			
Natural gas PG&E Citygates index \$/mmBtu	4.48	+0.21			
Natural gas SoCal Gas Co index \$/mmBtu	4.35	+0.23			

for methodology and more data, see
 Argus US Electricity and Argus Natural Gas Americas

#### Palo Verde-SP15 year 1 spread vs Dec-13 CCA



## Prompt SO<sub>2</sub> vs prompt +6



\$/allowance

Ecology and two local air agencies, to compel them to regulate emissions from the state's five refineries under provisions in the federal Clean Air Act.

The air agencies disputed whether they were required to regulate emissions beyond a certain set of pollutants, which do not include GHG emissions. The court sided with the environmentalists and said GHGs fall within the pollutants covered. The air agencies appealed that decision.

In November 2013, the US Ninth Circuit Court of Appeals decided that the environmental groups did not have enough legal standing to challenge the state's failure to enact GHG limits for refineries.

Despite the ruling, the department must go ahead with the rule-making because the appeal of the 2011 court case is not yet resolved.

The regulation would apply to five refineries in Washington: BP's Cherry Point refinery in Blaine; the Phillips 66 refinery in Ferndale; the Shell refinery in Anacortes; Tesoro Refining & Marketing in Anacortes; and US Oil & Refining Tacoma refinery.

Washington has 589,700b/d of refining capacity, according to *Argus* data. The state accounts for 23pc of west coast crude throughput capacity.

## California regulators launch CO<sub>2</sub> exchange

California air regulators have launched a  ${\rm CO_2}$  emissions credit exchange to make it easier for new and modified sources to offset any increase in greenhouse gas emissions.

The new CO<sub>2</sub> Emissions Reduction Credit (ERC) exchange, created by the California Air Pollution Control Officers' Association, is intended to help sources comply with state permitting requirements.

ERCs are generally used to prove that the level of emissions in an air district in California will not be significantly affected by a new project. They are commonly used in California for  $SO_2$ ,  $NO_X$  and particulate matter.

The exchange only lists greenhouse gas ERCs from projects located within California. The credits are issued for projects that generally could not be issued California Carbon Offsets under the state's cap-and-trade program.

There are 12 projects on the exchange with 256,000 metric tonnes of issued  ${\rm CO_2}$  ERCs, all located in the San Joaquin Air Quality Management District.

ERCs are generally issued when a facility shuts down or finds another way to cut emissions. One of the projects issued CO<sub>2</sub> ERCs is for the shutdown of a cotton gin in Five Points, California. Another is for a glass manufacturer replacing a furnace with a more efficient one in Kingsburg.

## US CO<sub>2</sub> emissions inch higher in 2013

US energy-related  ${\rm CO_2}$  emissions likely rose by 2pc last year because of a small increase in coal use, the Energy Information Administration (EIA) said today.

EIA said it expects last year's  $CO_2$  emissions totaled 5.4bn metric tonnes, up from 5.3bn t in 2012. The agency expects higher emissions for all fossil fuels, but the largest increase, 4.2pc, will be from coal, which it said had regained market share from natural gas since a low in April 2012.

Even with the uptick in emissions, 2013 levels will be 10pc below 2005, the baseline year for the Obama administration's climate efforts. The US has set a goal of cutting emissions by 17pc from 2005 by 2020.

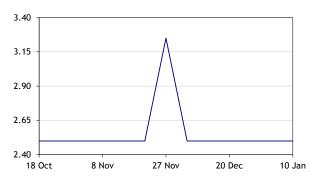
EIA expects emissions this year will be slightly higher than 2013 at just over 5.4bn t, and then will be mostly flat in 2015.

## North Carolina fights fine particulate rule

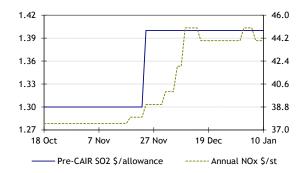
North Carolina is suing the US Environmental Protection Agency (EPA) to overturn a federal implementation rule for meeting fine particulate air quality standards.

The state is challenging the implementation rule that EPA

#### CSX compliance vs CSX < 1% sulfur coal



#### Prompt SO<sub>2</sub> vs annual NO<sub>x</sub>



\$/st

issued in 2010 that helps states determine if sources violate a 2006 revision to the 24-hour fine particulate ( $PM_{2.5}$ ) standard. The state argues that EPA violated the Clean Air Act by deciding to set different baselines for PM2.5 and larger dust particles known as  $PM_{10}$ .

The new fine particulate baseline is inconsistent with a prior court ruling and puts North Carolina at an economic disadvantage, the state said last week.

The DC Circuit Court Appeals ruled in January 2013 that  $PM_{10}$  includes smaller dust particles of 2.5 microns or less and should be regulated under the same section of the Clean Air Act.

EPA's 2010 proposal set maximum increments, the amount by which emissions could exceed the levels of a baseline year. A 1975 baseline had been in place for  $PM_{10}$  but was obsolete and too lax for fine particulates. Thus, EPA regulated fine particulates as a "new pollutant" rather than a subset of  $PM_{10}$ , allowing it to set a more stringent 2010 baseline for fine particulate matter.

A wider increment would give a larger window for new or modified sources to emit and still stay within compliance, allowing more development projects to get permitted, North Carolina said.

The environmental group the Sierra Club filed a notice late last week with the DC Circuit to intervene on behalf of the EPA. Oral arguments have not been scheduled.

## 14 JANUARY FEDERAL REGISTER

#### Rules

Air Quality State
Implementation Plans;
Revisions: California; El Dorado
County Air Quality Management
District

2014-00398 [EPA-R09-OAR-2013-0753; FRL-9905-29-Region 9]

## **Proposed Ruls**

Air Quality State Implementation Plans; Revisions: California; El Dorado County Air Quality Management District

Permits: Federal Minor New Source Review Program in Indian Country

## Notices

2018 Emissions Modeling Platform; Availability

2014-00399 [EPA-R09-OAR-2013-0753; FRL-9905-28-Region 9] 2013-30345 [EPA-HQ-OAR-2011-0151; FRL-9904-09-OAR]

2014-00564 [EPA-HQ-OAR-2013-0809; FRL-9905-43-OAR]]

## **ARGUS Q&A**

#### **Ned Helme**

Ned Helme is president of the Center for Clean Air Policy (CCAP), a Washington, DC- based environmental think tank that helps policymakers implement market-based solutions to climate, air quality and energy problems. Helme advises members of Congress, state governments, the European Commission and developing countries. In this interview, edited for length and clarity, Helme talked about the outcome of the recent UN Framework Convention on Climate Change Conference (UNFCCC) talks in Warsaw and power plant regulations that the Environmental Protection Agency (EPA) will propose in June.

Argus: What do you think of the 2015 roadmap that came out of the recent UN talks in Warsaw?

Helme: I think it is a reasonable strategy. My sense is that the key is 2014. The green climate fund (GCF) was basically getting nowhere for most of last year, and in October it started to get serious. There are two meetings in February and in May, and these will be part of a series of critical steps toward an agreement. By May, we should have real signals of the money and how it will work, and that will lead to a series of commitments - especially from Europeans - of money for the GCF. My sense of this negotiation is that you need the "carrot" - the money the GCF will offer and other bilateral kinds of monies for support of Nationally Appropriate Mitigation Actions (NAMAs) - and support of policy actions by developing countries. If at those two meetings we get an agreement, and some announcements of money in the summer, then UN secretary general Ban Ki-moon is convening a climate summit in September, looking for commitments from countries. March of 2015 is the timeframe for real announcements of pledges. I think it is a reasonable timeline. You can watch how this unfolds and know whether we are on track. But if the money

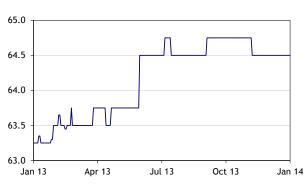
falls apart, the whole process is going to be in tough shape. There are good signs, though. Although the numbers never came up, there was \$20bn on the table for the next year or so in the discussions in Warsaw, and that is real money.

Argus: Disagreement between industrialized and developing nations over the general direction of global action, including who should cut emissions when, still seems to be a recurring theme at the UN talks. What is the best way to get countries heading in the same direction?

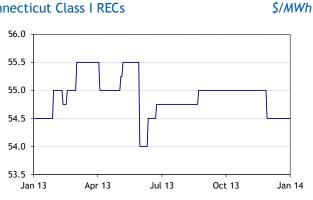
Helme: I think this whole area of NAMAs is really the critical piece. We have been doing a lot of work [in this area]. You may have seen that the UK and Germany have built the NAMA facility, and we are helping with that. They announced in Warsaw that the first five NAMAs were funded at roughly \$20mn each. That process is going to lay the groundwork for the agreement. What is important in these NAMAs is their combination of policy change with financial mechanisms. So you are getting action by government and creating a financial mechanism that allows the private sector to jump in behind it. In Colombia, we have a NAMA on waste, and the country is changing its rules on waste so that it is attractive for corporations to use positive, environmentally friendly technology. Rather than dumping waste into waste dumps, there can be recycling, composting and other measures that are better greenhouse gas (GHG)-wise and are better developmentally, better for the people around the dumps. That kind of win-win story is what opens up the agreement, because local politicians can say this is a winner today, not just 20 years from now. That sort of picture creates a lot of momentum for the agreements.

There is still a great deal of low-hanging fruit, a number of things developing countries can do that are not expensive. These NAMAs will put [them] on the table and narrow some

## Massachusetts Class I RECs



## Connecticut Class I RECs



\$/MWh

differences. When you step back and think about what developing countries do, they are doing things that make sense for other reasons. Achieving development, health and mobility improvements as well as GHG reductions is the secret to these kinds of actions, so you are getting another set of benefits that play well in the host country.

**Argus:** How do you think the Chinese pilot trading programs launched this year are going?

Helme: They are promising. China is looking for win-win policies. The Chinese are looking for things that make sense from a development and an energy perspective. The use of carbon trading is really a way to make it cheaper to make those reductions. It makes sense that they would be looking at this, and I think it is a serious effort that it will help.

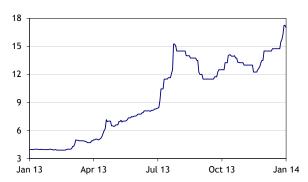
Overall, China has a good idea of what its target will be and I think it will be a positive player between now and [the 2015 UNFCCC meeting in] Paris. The game has shifted. The US is now a more positive player, the Europeans have been all along. There is some loss of momentum in India and other places, but overall I am somewhat optimistic. The big players are moving in a similar direction, despite their public spats. Behind the scenes, they are working together.

**Argus:** Are there initiatives outside the UNFCCC process that are noteworthy?

**Helme:** I think the UK-German NAMA facility is important. It is only \$100mn this first round, but they have already announced another round with \$100mn, and I think that is an important building block.

I also think the Climate and Clean Air Coalition, an initiative looking at short-lived pollutants that have high impact, is very good. It looks at HFCs and methane reductions from waste, natural gas facilities, oil rigs and that sort of thing. It is important, and real money is starting to show up on

New Jersey Class I RECs \$/MWh



the table. Again, this is a great basis for countries seeing what we can do that is not so bad for us.

**Argus:** How do you see the action President Barack Obama's administration is taking to regulate power plant emissions affecting international negotiations?

Helme: I think it is positive. The perception of the US changed dramatically between the 2012 COP meeting and last year's meeting. That was because the president announced his major climate initiative last summer, and he has shown that he is serious about it. It has been quite a change, also, in terms of the stance taken by the US State Department, which has been much more positive. Now they know the president is behind them and the election is behind them and they are able to move this forward. It has changed the game. It has helped. And we will make our targets, so that gives us a nice bully pulpit to talk from.

**Argus:** What direction do you think the Environmental Protection Agency (EPA) will take with its regulations for existing power plants? Have you heard anything from the agency that concerns you?

Helme: My sense is that it is serious and interested in making this flexible enough that [companies] can try a lot of innovative things and new technologies. [It will not be] a narrow reading of the statute, but one that is a little more flexible, that gives us room to run. It will definitely rely on states. The law requires that. The opportunity is to convince states that there are [potential benefits] in it.

We are doing a lot of work in this area, focused on combined heat and power (CHP) and energy efficiency in the midwest. Our sense is that there is a big opportunity there. The administration set a goal of reaching 40GW of CHP by 2020, and we have seen a study from McKinsey saying that 50GW is possible. That is a lot - 150mn tonnes of  $\rm CO_2$ . All of it will not get built, but as a compliance strategy, it is a big winner. As with NAMAs, you can do things that are good for the environment and good for the economics of the area. It is a good opportunity.

*Argus*: Last year you suggested EPA could use an approach to regulating power plants that included relying more on existing natural gas-fired power plants and increasing use of CHP. Have you submitted a formal proposal to EPA or do you plan to?

Helme: We testified in an EPA public listening session and are doing modeling on the CHP opportunity. We have not gotten the model results yet, but our hunch is that it is promising. It will take some work - the states will have to be behind this - and will take some change in the way in which utility regulation proceeds. But I think that it is doable.

#### **METHODOLOGY**

Argus publishes daily prices for the Acid Rain Program SO<sub>2</sub> allowances and Clean Air Interstate Rule annual and seasonal NO, allowances. Argus also publishes monthly indexes for the spot vintage of each SO<sub>2</sub> and NO<sub>3</sub> market. All Argus Air Daily monthly indexes are the arithmetic average of the daily price published for current vintage allowances for each day on which prices were published during that month.

Argus also publishes daily prices for tradable renewable energy certificates (RECs) in the Connecticut, Massachusetts, New Jersey, Pennsylvania and Texas markets, and monthly indexes for the current compliance year of each REC product.

Argus also publishes daily prices for vintage 2013 and 2014 California Carbon Allowances for December 2013 and December 2014 delivery contracts, and a monthly index for the December 2013 delivery assessment.

Argus publishes daily Regional Greenhouse Gas Initiative CO<sub>2</sub> allowance prices for immediate delivery and December delivery contracts for allowances in the second compliance period (2012-2014). Argus also publishes a daily high, low, and volume weighted average price and a monthly volume weighted average for trading activity in forward delivery market for allowances that can be used in the second compliance period. In the event of insufficient trade activity, the volume weighted averages will revert to the daily assessed midpoint.

Argus also publishes weekly prices for greenhouse gas offsets issued by the Climate Action Reserve. Californiacompliant offsets are issued to projects developed under the reserve's forestry, urban forestry, livestock methane or ozone depleting substances protocols, which California has said can be recognized in its mandatory greenhouse gas trading program. Non-California-compliant offsets are issued by the reserve to projects developed under its other protocols and trade in the voluntary market.

The Argus daily prices are intelligent assessments of the bid/ ask range at the timestamp of 5pm ET for all markets except California Carbon Allowances, which use a timestamp of 6pm ET. The price represents the midpoint between the assessed bid and ask. The assessed range takes into account deals done, bids, offers, spreads between current and future vintages, and other market data gathered through a wide survey of participants. The assessment represents the range within which deals traded or could have traded at the close of the trading day for that particular vintage. Argus holds as a guiding principle that our assessments should be the product of intelligence, skill and diligent investigation.

Argus collects details on SO<sub>2</sub>, NO<sub>x</sub>, REC, LCFS, CCA and RGGI transactions completed in the market and publishes them in deals done tables in Argus Air Daily each business day. Argus also provides a daily summary of the Environmental Protection Agency's daily allowance transfer report, which shows the volume and types of trades reported to the agency's allowance tracking system. Argus only publishes the transfers between non-affiliated

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