

## Coast to coast

*Northeast regulators are about to embark on a review of the region's carbon market program, while California officials close in on the final details of their trading program.*

Officials in the Regional Greenhouse Gas Initiative (RGGI) will hold a stakeholder meeting today to prepare for a review of the CO<sub>2</sub>-reduction program that could lead to changes during the second compliance period. Analyses released last week suggest the nine-state cap-and-trade program will remain well below its cap for the foreseeable future, while cheap allowances have not yet resulted in the emissions leakage that some had feared when the program launched in 2009.

Across the country, California regulators are a step closer to finalizing the remaining regulations for the state cap-and-trade program, part of a broader effort to cut the state's greenhouse gas emissions to 1990 levels by 2020. The California Air Resources Board last week issued the final draft of rules that include changes to allowance allocation methods for the oil and gas sectors and emissions accounting measures for imports of renewable energy.

Lower power demand and expected

- RGGI plans program review
- Emissions well below cap
- California regulations near finish

plant retirements will keep emissions from sources covered by RGGI below the program cap through at least 2020, according to modeling prepared for the program's 2012 review.

### RGGI

The modeling developed for the RGGI states to use in their program-wide review suggests annual electric load growth in the nine states that will participate in the regional CO<sub>2</sub> trading program after this year is expected to slow to 0.32pc/yr from 2011-2020, resulting in lower emissions than previous analyses predicted. New Jersey plans to pull out of the program at the end of this year, and the remaining states must consider how to adjust the smaller region's cap.

The modeling, developed by consultancy ICF, assumes 2,561MW of new generating capacity will come on line in the RGGI states in the New England Independent System Operator's (ISO) service territory by 2013, a majority of which is expected to be natural gas.

An additional 1,928MW of new capacity is expected to begin operating by 2013 in the New York ISO, largely from natural gas-fired units and nuclear uprates.

PJM is likely to see an additional 403MW of new capacity on line by 2013, and 250MW of capacity from a Bluewater Wind offshore facility is expected to be operating by 2016, according to the modeling assumptions.

Within the RGGI region, 1,408 MW of coal-fired capacity and 3,270MW of nuclear capacity is expected to retire by 2015.

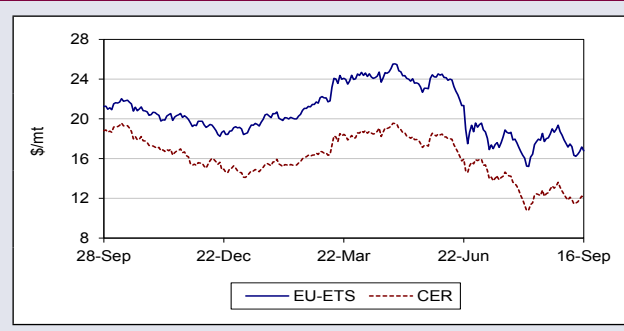
Electric generation from facilities cov-

*Continued on p2*

### To our subscribers

*Argus US Carbon* will publish its final edition on 26 September. Beginning on 3 October, much of the premium news and analysis that you have come to expect from this report will be available in *Argus Air Daily*. Shifting from a weekly to a daily format will allow more timely access to news and information about emerging carbon markets and the regulations and legislation shaping those markets, as well as the coverage of Renewable Energy Certificates and SO<sub>2</sub> and NO<sub>x</sub> allowances for which *Argus Air Daily* is already known. An account manager will be in contact about your subscription. If you have any questions in the meantime, do not hesitate to telephone your representative.

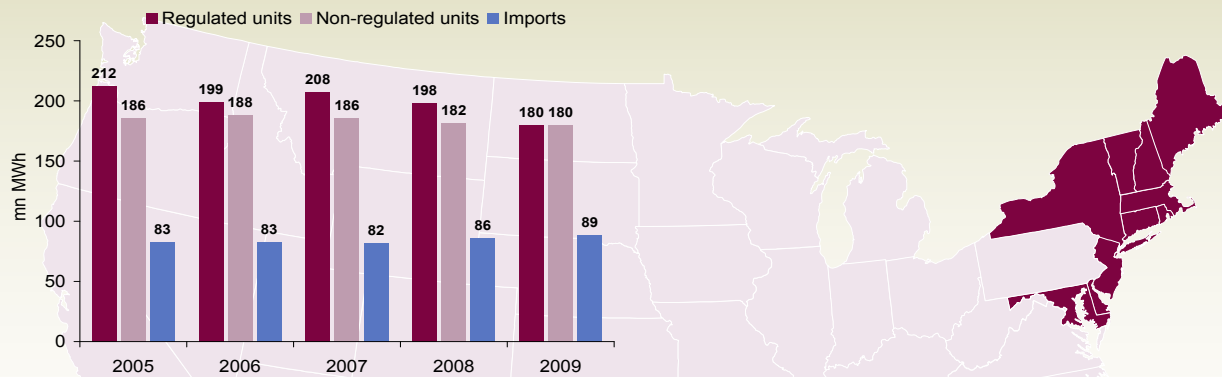
### CO<sub>2</sub> EU ETS vs CDM CERs



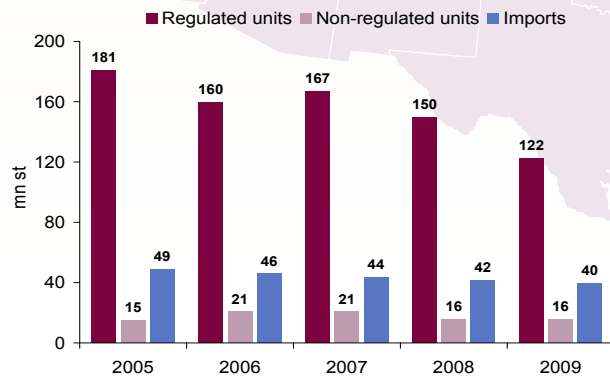
*"We seem to be politically incapable of coming together and coming up with a better energy policy." — Tim Profeta, Nicholas Institute for Environmental Policy Solutions, Page 8*

## RGGI trends

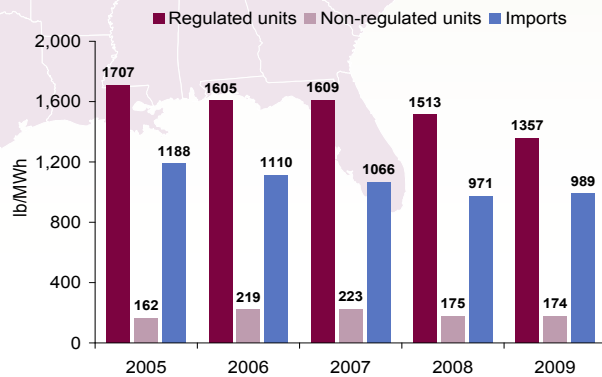
### RGGI electricity generation



### CO<sub>2</sub> emissions



### CO<sub>2</sub> intensity



Source: RGGI Inc.

## Coast to coast

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ered by the RGGI cap decreased 17.9mn MWh, or 9.1pc, from 2008 to 2009 and CO<sub>2</sub> emissions from those facilities fell 27.6mn st (25mn metric tonnes) over the same period, RGGI data show.

ICF's modeling suggests CO<sub>2</sub> emissions will stay below the program cap in almost every scenario with allowance prices unlikely to rise above the auction floor, which is currently set at \$1.89/short ton.

The massive bank of allowances utilities have accumulated over the 2009-2011 compliance period will prevent prices from rising even under scenarios in which actual emissions exceed the cap in future compliance periods.

The recession and low natural gas prices are widely regarded as the driving forces behind the sharp CO<sub>2</sub> reductions in the region. Natural gas prices are expected to be \$1/mmBtu lower than predicted in earlier modeling, with delivered fuel prices into

the region staying between \$5 and \$6/mmBtu (\$2009) through 2020. Delivered coal prices are expected to run at \$2-\$3/mmBtu during the same period.

The data also show that emissions from electricity imported into RGGI have not increased but declined by about 2mn st. A report released by RGGI Inc on 13 September cautions against drawing any specific conclusions, though it speculates that low allowance prices have meant compliance costs have not been high enough to trigger significant emissions leakage.

### California

California regulators on 12 September released the final draft of GHG cap-and-trade rules that are expected to be finalized at the Air Resources Board hearing on 20 October. The board is accepting comments on the draft for another week. The final rule

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# Coast to coast

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must be sent to the state's administrative law office before the end of October to follow a statutory requirement for regulations to be finalized a year after they are first made public.

The draft differs from the one released in July in several ways, but the most significant change affects the way oil refineries will be allocated allowances. The sector will receive free allowances to cover 90pc of its overall emissions, but individual refineries' allocations will be calculated using either an energy efficiency index based on specific production and emissions levels or a benchmark number to calculate the number of allowances per barrel of production.

The energy efficiency index was developed by Solomon Associates and is calculated by comparing a specific refinery's energy use, throughput and output with the standard energy efficiency of similar refineries. The consultancy most recently reviewed some of the state's refineries in 2008.

Some refineries have not yet been reviewed by Solomon Associates and do not have a source-specific energy rating. Others produce products other than gasoline, so the index is not an appropriate measure for their emissions intensity. Those refineries will receive allowances based on the number of barrels of petroleum products produced, using a benchmark emissions rate and the facilities' baseline average annual emissions.

Refineries that have been given energy efficiency ratings will be allocated allowances from the most efficient to the least efficient, with the best-performing facility receiving 100pc of the allowances needed to meet its emissions reduction obligation.

For the second compliance period that begins in 2015, all refining facilities' allocations will be based on their production and allowance allocation levels from prior years. This allocation

method will account for any output that is over or under each refinery's prior year allocations.

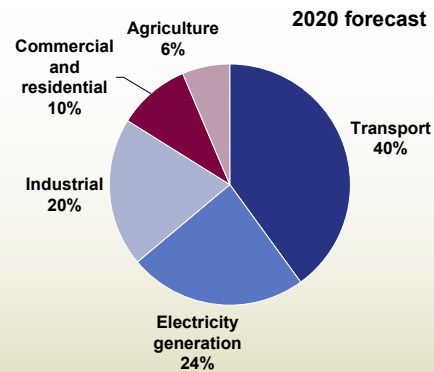
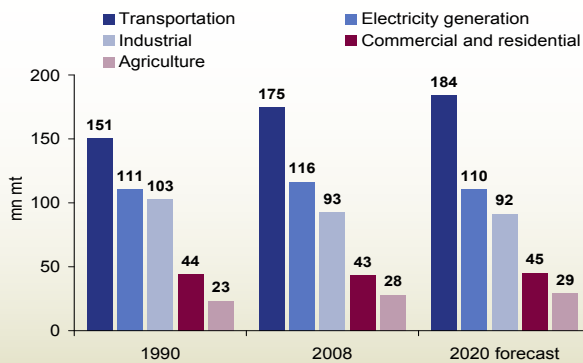
The new draft also eliminates the compliance obligation on renewable energy imported into the state. Previous versions of the draft rules would have made utilities surrender allowances to cover any emissions associated with power brought into the state, including imports of renewable energy. Under the new draft, if renewable energy certificates are attached to the imported power, utilities will not have to include them when calculating their emissions.

The draft does not make substantive changes to the offset buyer liability provisions. The board has authority to invalidate any offsets that it finds were issued through error or fraudulent calculations. The obligation to replace invalidated offsets lies with the entity that holds the offsets when they are invalidated or the entity that has surrendered them for compliance.

Only minor edits were made to clarify some specific conditions. An offset issued in 2011 will broadly be irrevocable beginning in 2014, after it has been dual-verified. The board cannot invalidate offsets from projects that destroy ozone depleting substances after three years of their issuance if a second verification body has reviewed and verified the project's emissions reductions. Offsets issued to livestock methane reduction projects or US urban forestry or forestry projects can be invalidated any time within three full compliance periods after they are issued, even if the project is verified again by a different verifier within three years of the offset issuance.

While many stakeholders have repeatedly pushed the regulator to do away with the invalidation provision or come up with an insurance buffer pool of offsets siphoned off from all the issuances, board staff ultimately felt that it was not the role of the state to guarantee offsets.

## California GHG emissions by sector



Source: California Air Resources Board

# Sparks fly

*The Obama administration has been forced to defend its clean energy investments against Republican attacks that it rushed a loan guarantee to now-bankrupt solar company Solyndra.*

Republicans claim the Obama administration rushed a loan guarantee approval to the now-failed Solyndra, a solar panel manufacturer, but the White House remains committed to clean energy investments.

- **Republicans question loan guarantee**
- **White House pressure cited in approval**
- **Administration defends 'rigorous' review**

In September 2009, Solyndra became the first recipient of a Department of Energy (DOE) loan guarantee, worth \$535mn, to expand its California solar manufacturing capacity. Late last month, the company filed for bankruptcy and on 8 September it was raided by the Federal Bureau of Investigations (FBI), sparking a hearing last week by the House Energy and Commerce Committee.

The committee's Republican members presented emails they claim show administration officials pressured DOE and the White House Office of Management and Budget (OMB) to quickly approve the Solyndra loan – despite the fact that both had reservations about the company.

Democrats denied claims that they rushed to spend stimulus funds and said that while any wrongdoing must be investigated, none has been proven. Republicans also questioned whether DOE broke the law when it restructured the loan earlier this year to give private investors, not taxpayers, the first option on recouping their money if Solyndra is liquidated.

The development is an embarrassment to President Barack Obama, who visited Solyndra's facilities last year, and the collapse raised the broader issues about whether the government should fund clean technology companies or leave it to the market.

## Solyndra

DOE Loan Programs Office executive director Jonathan Silver defended the loan guarantee, telling the committee that the Solyndra application went through nearly three years of "rigorous and exhaustive" due diligence. He said the Solyndra loan was based on merit with no favoritism.

According to emails released by Republicans last week, on 9 January 2009, a DOE committee that reviewed the loan under President George W. Bush denied Solyndra's application and remanded it back to the DOE for more information. The committee

said the number of "unresolved" issues made approval "premature."

Obama was inaugurated on 20 January and in March 2009 the same committee approved the updated application.

Silver said that after the president took office, his staff issued the March 2009 conditional loan guarantee commitment to Solyndra, "on the exact timeline that had been developed during the Bush administration."

But August emails from DOE staff refer to concerns over "working capital" and "liquidity." Other August emails from OMB staff refer to being under "time pressure" to "sign off on Solyndra" and "rushed approvals" on due diligence. The emails also refer to vice president Joe Biden's planned 4 September announcement on Solyndra and efforts to "speed" the process along. The documents "raise troubling questions about whether OMB staff was rushed to complete its review of the Solyndra loan guarantee by September 4, 2009, in time for a groundbreaking event at Solyndra's facilities organized by the White House," said a Republican statement.

White House spokesman Jay Carney denied the administration tried to influence or accelerate the Solyndra decision. "There was urgency to make a decision about a scheduling matter," he said.

## House members clash

Democrats and Republicans clashed at the hearing over whether the Solyndra collapse could have been predicted and whether the administration should fund more clean energy projects.

Ranking member Henry Waxman (D-California) questioned whether Solyndra "misled" the government after the company chief executive said in July that the company was "in no danger of failing," only to declare bankruptcy a month later. Waxman said the possibility of "unforeseen" developments in the global market place and "sloppy or inadequate vetting" must also be investigated.

Committee chairman Fred Upton (R-Michigan) asked if Solyndra was "just one bad bet" or "the tip of the iceberg" and questioned "whether the government is qualified to act as a venture capitalist."

Solyndra has blamed cheap Chinese government-backed solar panels as a major factor in its collapse. Silver noted that last year China provided more than \$30bn in credit to its solar manufacturers – 20 times more than the US.

Waxman warned that a federal withdrawal from clean energy funding would be an "economic death sentence" for fledgling US companies competing against heavily subsidized foreign companies. Carney said Obama remains "committed to the loan guarantee program" and to investing in clean energy. Last week, DOE finalized a \$1.2bn guarantee for Abengoa's 250MW Mojave solar project in California.

### DOE loan guarantees by technology

	bn \$	Projects
Solar generation	14.6	15
Nuclear	10.3	2
Wind generation	1.7	4
Solar manufacturing	1.3	4
Other	1.5	11

Note: Includes conditional and finalized section 1703 and 1705 loan guarantees.

Source: DOE Loan Programs Office

# Reserve positions

*A federal advisory panel urged the Obama administration to take advantage of the continent's "enormous" oil and gas reserves while considering putting a price on greenhouse gas emissions.*

The US' National Petroleum Council (NPC) last week challenged a key tenet of President Barack Obama's energy policy, issuing a new report highlighting the nation's bountiful oil and natural gas resources. The federally chartered and

privately funded advisory council's new report, Prudent Development: Realizing the Potential of North America's Abundant Natural Gas and Oil Resources, points to the US' "enormous" natural gas resources and a "surprisingly" abundant oil resource base. "Through technology leadership and sustained investment," the US and Canada "together now constitute the largest oil producer in the world," the 15 September report said.

- Report highlights oil, gas reserves
- Says natural gas can help lower GHGs
- Calls for CCS support

## Greater than expectations

The report points to the shale gas revolution, which offers "significant, potentially transformative benefits for the US economy, energy security and the environment." But the oil resources too are "proving to be much larger than previously thought," the report said. After declining in recent years, oil production in the US and Canada grew in 2009 and 2010. The US and Canada now produce 4pc more oil than Russia, the world's single largest oil producer.

The US and Canada boast two world-class old basins in the deepwater Gulf of Mexico and the Alberta oil sands that could help boost production up to 2030 and beyond, the report said. And tight oil in geological formations such as the Bakken shale in North Dakota, as well as new offshore areas, the Arctic and even the shale oil deposits in Colorado, Wyoming and Utah could provide future supplies, the NPC said. "Contrary to conventional wisdom, the North American oil resource base could provide substantial supply for decades ahead," the report said.

Obama has long argued that with only 3pc of the world's oil reserves, the US cannot drill its way to energy security. But the new report notes: "Contrary to conventional wisdom, the North American oil resource ... could provide substantial supply for decades ahead."

US energy secretary Steven Chu, speaking on the sidelines of the NPC meeting, acknowledged "we do have resources," but argued that means "we have time to make a transition" to cleaner fuels. "These transitions take decades," Chu said. "That does not mean we just put it off."

The tone of the report is in marked contrast with the NPC's 2007 study, Hard Truths, which said the US public at the time was "very concerned about energy — its availability, reliability, cost and environmental impact."

NPC chairman and former Chevron chief executive Dave O'Reilly said the report was not meant as a "rebuke" to the president. "We were all surprised by this conclusion," O'Reilly said.

The administration has been working off the data in the 2007 Hard Truths report, which "as you look back on it now underestimates the potential for natural gas resources and production, as well as oil production in this country," O'Reilly said.

The report emphasized the benefits natural gas can provide in helping reduce greenhouse gas (GHG) emissions, noting gas is much cleaner burning than coal. Natural gas combined-cycle plants emit about half as much CO<sub>2</sub>/MWh than a conventional coal-fired plant. The NPC report estimates that, excluding transportation, greater use of natural gas could reduce yearly US GHG emissions by anywhere from 126mn to 864mn metric tonnes of CO<sub>2</sub>, or 2-12pc of emissions in 2005, the base year for the most recent federal cap-and-trade proposals.

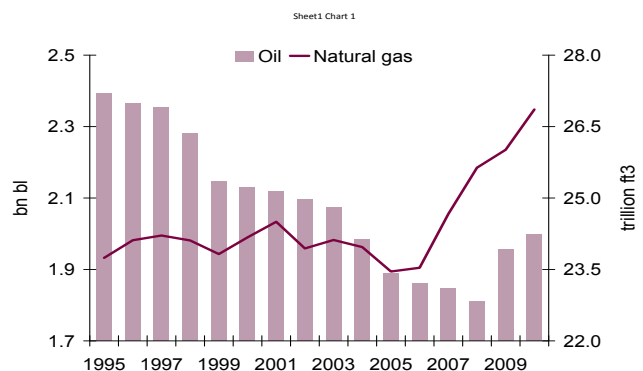
## Deeper cuts

But deeper cuts in GHG emissions will require putting a price on carbon and pushing technologies such as carbon capture and sequestration (CCS). The report urged lawmakers to focus on creating a GHG pricing mechanism that is "national, economy-wide, market-based, visible, predictable, transparent, applicable to all sources of emissions, and part of an effective global framework."

It also said that if Congress adopts other policies, such as a clean energy standard, it should be technology-neutral, allowing natural gas to qualify as a clean energy source.

For CCS, the report recommends that the federal government work with states, universities and energy companies to fund basic and applied research to help reduce costs, develop "some number" of full-scale demonstration projects and to establish a legal and regulatory frame work "that is conducive to CCS." It also calls on policymakers to find mechanisms to support the use of CO<sub>2</sub> without raising its cost to users in appropriate EOR (enhanced oil recovery) applications."

## US oil and gas production



# Measuring sticks

*Recent polling suggests more Americans believe global warming is happening, while differences of opinion between voters across the ideological spectrum have sharpened.*

The number of Americans who believe global temperatures are on the rise appears to be rebounding, after declining in recent years. Three recent polls show that up to three-quarters of US adults and voters say global warming is occurring, though there is some split on whether the causes are human activity, natural variation or a combination of both.

The polls also show that more Democrats and independents than Republicans tend to agree that temperatures are on the rise. At the same time, views on both sides have hardened somewhat.

## Beliefs

A new Ipsos poll conducted for Stanford University and Reuters and released on 16 September shows the number of Americans who believe that global warming is occurring is at 83pc, up from 75pc last year. This includes 91.4pc of Democrats, 66.5pc of Republicans and 84.2pc of independents, all higher than the previous poll conducted in November 2010.

The poll also found that beliefs have hardened, with 60.6pc of Democrats saying they are extremely or very sure of their views, up from 58.9pc last year. Among Republicans, the number saying they are certain global warming is or is not happening is 39.2pc, up from 35.7pc last year.

The Ipsos survey echoes the general findings of a CNN/ORC International poll released on 12 September. Both surveys, as well as a recent poll by Yale and George Mason universities, found that Democrats and independents are significantly more likely to believe that human activity is the primary cause of climate change.

The CNN poll found that 70pc of Americans believe global warming is a "proven fact," including 48pc who say it is mostly cause by emissions from automobiles and industrial facilities

- **Most adults say temperatures rising**
- **Democratic, Republican positions harden**
- **Tea party backers oppose climate policies**

and 22pc who say it is mostly from natural causes. The numbers are up over last year by a few percentage points, but still below previous years the question has been asked. According to Ipsos, 87.7pc of Democrats

believe human activity is partly or mostly to blame, while 68.7pc of independents and 54.2pc of Republicans share this view. In the CNN poll, 77pc of Democrats attributed rising temperatures to industrial emissions, but only 38pc of independents and 26pc of Republicans did.

The CNN and Yale/George Mason polls also looked at beliefs among tea party supporters, with the latter covering a broad range of energy and environmental issues. Both find that supporters of the tea party movement are significantly more likely to believe global warming is not occurring, or that it is mainly due to natural causes.

Slightly more than half of the tea party supporters, 51pc, surveyed by CNN say climate change is not proven, while 18pc say it is caused by industrial greenhouse gas (GHG) emissions and 31pc say it is from natural causes. According to the Yale poll, 53pc of tea party members say global warming is not happening and only 34pc say that it is.

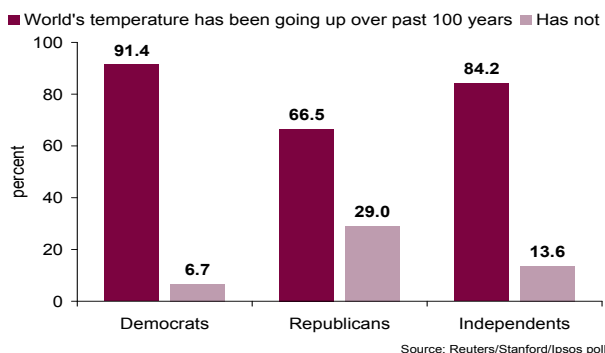
The Yale survey also found majority support among Democrats, Republicans and independents for requiring utilities to produce at least 20pc of their electricity from renewable sources, even if it cost the average household an extra \$100/yr. Majorities of all three groups also support an international treaty to cut GHG emissions 90pc by 2050.

But 54pc of tea party supporters oppose the renewables mandate and 64pc oppose a treaty. Tea partiers were also more likely to oppose other measures to cut emissions, such as energy efficiency requirements, higher gasoline taxes or changing local zoning rules to increase density.

The poll results give a glimpse into why most Republican presidential candidates do not believe scientists have proven that global temperatures are on the rise and that humans are the main reason why. Holding a contrary view could cost candidates precious votes.

Texas governor Rick Perry (R) made his views clear shortly after entering the race last month, accusing climate scientists of manipulating data for financial gain. Former governor Mitt Romney (R) had said he believes humans are causing global warming, while opposing unilateral action by the US. Perry has led Romney in several recent opinion polls. Some polls have showed that while Romney leads among Republicans who believe global warming is happening, Perry is far ahead among those who do not.

### Belief that global warming is occurring



## Bill cuts vehicle funds

House Republicans on 15 September introduced legislation to fund government operations through mid-November that would cut funding for federal loans for advanced automobile technologies to pay for disaster relief assistance.

The continuing resolution introduced by House Appropriations Committee chairman Hal Rogers (R-Kentucky) would fund government operations through 18 November, giving lawmakers additional time to reach agreement on fiscal year 2012 spending bills. The Rogers resolution includes \$3.7bn for disaster relief efforts.

Of that \$1bn would be available immediately and paid for by cutting \$1.5bn from DOE's advanced technology vehicles manufacturing loan program, which supports new technologies to make automobiles more efficient and to reduce greenhouse gas emissions.

## Senators seek RFS change

US senators Tom Udall (D-New Mexico) and Mike Crapo (R-Idaho) on 15 September introduced legislation to make the federal renewable fuels standard (RFS) "more technology neutral" in an attempt

## California solar loan set

The US Department of Energy (DOE) last week finalized a \$1.2bn loan guarantee for Abengoa's 250MW Mojave solar thermal project in San Bernardino, California.

The guarantee was offered to Abengoa in June with conditions, including a requirement for construction to commence before 30 September.

The project is expected to cost \$1.6bn and will sell its power to Pacific Gas & Electric through a 25-year power purchase agreement, pending state regulatory approval. It is expected to begin delivering power to the grid in 2014.

to help spur development of advanced biofuels such as algae-based fuels.

Udall and Crapo said the current language of the RFS favors cellulosic ethanol. Their bill would combine the cellulosic and advanced biofuels mandates of the program into one category that is technology neutral. The RFS requires the use of 21bn gallons of advanced biofuels by 2022.

## Renewables win shield

California's legislature has approved a bill to protect permits for renewable energy plants, renewable energy equipment manufacturers and almost any new build-ings on empty lands against lawsuits if certain conditions are met.

All projects must go through the full, often time-consuming California Environmental Quality Act (CEQA) permitting process, but the bill sharply limits the ability of outside groups to challenge permits. Numerous projects in the state have been mired in litigation for years. The bill limits the ability of parties to file suits against the CEQA-mandated environmental reviews to within 30 days of their approval by state or local regulators, and sets deadlines for court action on the reviews.

## Australia eyes carbon tax

Australia's government on 12 September introduced its carbon tax legislation into parliament — the third attempt by the ruling Labor Party to impose a carbon price on the domestic economy.

The legislation is expected to face a vote next month in the lower house of parliament, the House of Representatives, and in the Senate in November.

# EPA delays GHG regulations plan

The Environmental Protection Agency (EPA) said on 15 September it will not meet an end of the month deadline to issue a proposal to regulate greenhouse gas emissions from power plants.

The agency said it is working on a new schedule to propose the regulations that it will announce "soon," building on its "extensive and open public process to gather the latest and best information."

"We will fully consider all this information to develop smart, cost-effective and protective standards," the agency said.

This is the second time EPA has delayed the release of its proposal for New Source Performance Standards for greenhouse gas (GHG) emissions from power plants, which are based on the best-performing technology within the sector.

The agency was originally scheduled to issue a proposal

in late July under an agreement with environmental groups that had sued EPA. But the parties agreed in June to push back the proposal to the end of September, with the regulations to be finalized by 25 May 2012. The agreement also calls for EPA to proposal the standards rules for refinery GHG emissions by mid-December and finalize them by 15 November 2012.

Environmentalists said they were disappointed in the agency's announcement, which comes two weeks after President Barack Obama directed EPA to end its reconsideration of federal ozone standards.

"Today's decision suggests that when it comes to uncontrolled carbon pollution, the administration appears content with business as usual," said Joe Mendelson, policy director for the National Wildlife Federation's climate and energy programs.

## Tim Profeta

*Tim Profeta is the founding director of the Nicholas Institute for Environmental Policy Solutions at Duke University. Established in 2005, the institute works with decision-makers in business, industry, government and the nonprofit sector to help them understand complex environmental issues. Before joining the institute, Profeta was an aide to US senator Joe Lieberman (I-Connecticut) and helped author the Lieberman-McCain Climate Stewardship Act of 2003. He also sits on the boards of 8 Rivers Capital and the Climate Action Reserve. In this interview, edited for length and clarity, Profeta talks about the Environmental Protection Agency's (EPA) regulatory efforts for greenhouse gases and the status of state and regional trading programs.*

**Argus:** Were you surprised at all that the president's recent jobs speech made no mention of clean energy policy? Is that an indication that he realizes the policy faces a tough audience, particularly House Republicans?

**Profeta:** The answer is yes. There is this inopportune paralysis unfortunately within our political system where we have really pressing problems with energy but we seem to be politically incapable of coming together and coming up with a better energy policy. And that was a good indication of where we are on the issue, at least at the federal legislative level.

**Argus:** When you worked on the Hill, how long did you expect it would take to pass cap-and-trade legislation? Has your outlook changed since then?

**Profeta:** Senators Lieberman and John McCain (R-Arizona) had an approach to legislating that was to continue to raise the issue, to force votes, to demand accountability and educate their peers. I think we always thought it would take four or five Congresses. We often talked about it like it was going to have a timing like the campaign finance efforts that McCain had before and it walked that path pretty well. It seemed to be mature for resolution in the last Congress and then as we all know it failed politically. Now I am not sure what passes comprehensively. I believe there will be comprehensive climate legislation somewhere in our future, but there needs to be a rebuilding of a will to do it.

**Argus:** Now the focus is on what EPA can do. You recently wrote that EPA's flexibility under the Clean Air Act is "understated." What did you mean by that?

**Profeta:** What the article I was commenting upon was arguing was that the Clean Air Act was out of date and could not address the challenges of something like global warming and the flexibility needed to implement a program efficiently across

all the sectors and across all the emitters. I thought that article had understated EPA's ability to create flexible mechanisms. I pointed out that with the NO<sub>x</sub> SIP call, EPA created a trading program that was pretty popular amongst the regulated utilities for its flexibility under traditional ambient air quality standards. And that the section 111(d) provisions that govern existing sources under the greenhouse gas rules also have a great deal of flexibility on what sort of emissions reduction system a state would want to put in place. So there is flexibility there. It is really more bounded by the politics of the moment.

**Argus:** Is trading something you think EPA can or will propose for greenhouse gases under the forthcoming new source performance standards for power plants and refineries?

**Profeta:** I do not believe EPA is going to push any sort of trading regime through the Clean Air Act. But the beauty of the Clean Air Act through its SIP, state implementation plan, and section 111(d), what they call state implementation plan equivalence, is that the states get to innovate. It is really a cooperative federalist system. The states take the lead and EPA approves them. States clearly have the right to request that trading programs can be what they choose to put in place for greenhouse gases. So while EPA I doubt will be very aggressive on trading within the Clean Air Act, I do think that is something where the states can innovate in using those mechanisms at the sub-federal level.

**Argus:** So would it make sense for EPA to find that the Regional Greenhouse Gas Initiative (RGGI) or California programs qualify under the New Source Performance Standards (NSPS) guidance?

**Profeta:** We are doing a bunch of work on section 111(d) and will have a workshop in November on this very issue, this issue of equivalence and what guidance EPA should create for state plans by which they can judge whether a trading program like RGGI or the California system are equivalent to the Clean Air Act requirements. In short, I think EPA can and should allow the states to bring their own programs to the agency and try to demonstrate the equivalence of the programs. There are challenges in the details, in how you create the criteria, the guidelines for that judgment. EPA will clearly have to prove that it is truly equivalent, that it will truly get the reductions that a more traditional rate-based approach under section 111 would. But I think EPA has the authority to and will be open to embracing state plans that are truly equivalent.

**Argus:** Does the president's recent decision to stop reconsid-

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# Tim Profeta

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eration of the ozone standard have any implications for EPA moving ahead with greenhouse gas standards?

**Profeta:** I think they are separate questions. The failure to move forward on the ozone regulations was a significant political moment for the president. His base is clearly upset with him for it. It is something that industrial interests looking for regulatory flexibility were happier with. It is clearly a political story, but in terms of its implication for greenhouse gas regulation, I do not think it has any direct impact on those rules.

The one advantage EPA has under the section 111 program is that it is allowed to consider costs. So in the context of the current economic times and the current political environment, EPA will be able to move forward with section 111 rules that really weigh the cost of the program. That might give them the opportunity to really thread the needle politically so they can try to move forward with something.

**Argus:** RGGI members are preparing to review the program. Has it performed as you expected? Are there any significant chances that should be made?

**Profeta:** In general the program has created the architecture of a trading regime and a compliance regime, but it is clearly not stringent enough to qualify or unlikely to be stringent to qualify as an equivalent program under section 111. So if the states want to be able to use that architecture for compliance with section 111 and the 111 guidelines, I think the states will have to consider something that makes the program a little tighter and the emissions reductions a little more aggressive. But it has clearly proven that you can create an architecture for trading. It has created a system for that region that is now in place and with reappraisal of the mission's requirements, could function pretty well for the region.

**Argus:** Similarly, with California where do you see things?

**Profeta:** The offsets question in California is a particularly difficult one. There is a lot of resistance to offsets in the region. But the ability to provide those offsets to the market is important for it to be an economically efficient system. How to create an offsets regime that will be trusted in California while still providing low-cost abatement is a challenge. It will be a challenge throughout the entire implementation of the program. The rule that came out [on 12 September] does not have all the provisions on some cost-containment and the reserve that other drafts had, if my impression is correct. Those are important provisions to get nailed down. And there is just the basic politics of getting the system up. California's

politics are different than the national politics. Cap-and-trade is unpopular from the left on the environmental justice side. Many of us constantly make the point that greenhouse gases as a pollutant do not have concentrated effects.

Environmental justice concerns are not prevalent in cap-and-trade with greenhouse gases, but there are real legitimate concerns there that need to be addressed. That challenges will not only be in the beginning of the system, but in the implementation as well.

**Argus:** Going back to NSPS, what do you see as the likely path forward, energy efficiency?

**Profeta:** The agency has been pretty public about the fact that it is looking at best demonstrated technology for efficiency among these sources types and setting up a standard there, and then basing the existing source guidance off that, taking into account the age and class of each of the emitting sources. So yes I think you will get a rate-based efficiency-based standard and then a translation to existing sources for the state guidance.

What that translates to is a first step on emissions reduction, but nothing that is too aggressive. It is important that the agency put something forward that can be implemented, and implemented without economic distress, to begin to familiarize American politics with the idea that we can address the problem of greenhouse gases without having to choose between it and our economy. The creation of rules that move us in this direction but at a pace that allows the economy to grow as we implement it is important.

One thing I want to go back and say is we are talking around all these little pieces of the energy policy world, but really it is all part of a system. It is a system that has always existed, but we were not really looking to because of the idea that we would have a comprehensive legislative solution to these energy issues – climate change, energy security, economic security, competitiveness concerns. We have now failed that and so what has happened is the old system – the Clean Air Act, the public utility commissions, the states and regions – has been activated. Much of it had been held in abeyance, waiting for legislative action. One thing that I am trying to do is look at this as a system and think about how do the state programs interact with the Clean Air Act, interact with the public utility commissions and interact with the other various elements that touch and influence energy policy. We have to do the best we can with what we have got to move toward a better energy policy.

A colleague and I have been writing a paper that we have been trying to get out that is instead of let us talk about 111(d) or let us talk about RGGI, it is how do we fit these together into something that makes some sort of sense.

RECs markets

Compliance REC market prices					\$/MWh
	Vintage	Bid	Ask	Price	Change
<b>Massachusetts</b>					
Class I	2011	26.50	28.00	27.25	1.75
Class I	2012	26.75	28.25	27.50	1.00
Solar	2011	500.00	540.00	520.00	—
<b>Connecticut</b>					
Class I	2011	24.00	25.00	24.50	0.50
Class I	2012	24.00	25.00	24.50	1.00
Class II	2011	0.50	0.70	0.60	—
Class II	2012	0.40	0.80	0.60	—
Class III	2011	10.00	12.00	11.00	—
Class III	2012	10.00	12.00	11.00	—
<b>New Jersey</b>					
Class I	2011	1.10	1.40	1.25	—
Class I	2012	1.10	1.70	1.40	0.20
Class II	2011	0.20	0.60	0.40	—
Class II	2012	0.40	0.70	0.55	—
Solar	2011	620.00	650.00	635.00	—
Solar	2012	190.00	230.00	210.00	15.00
<b>Pennsylvania</b>					
Solar	2011	30.00	50.00	40.00	-5.00
<b>Texas (voluntary)</b>					
Half-year	H1 2011	1.30	1.50	1.40	0.05
Half-year	H2 2011	1.30	1.50	1.40	0.05

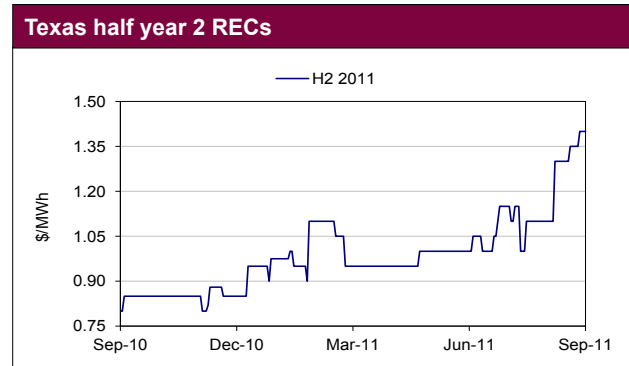
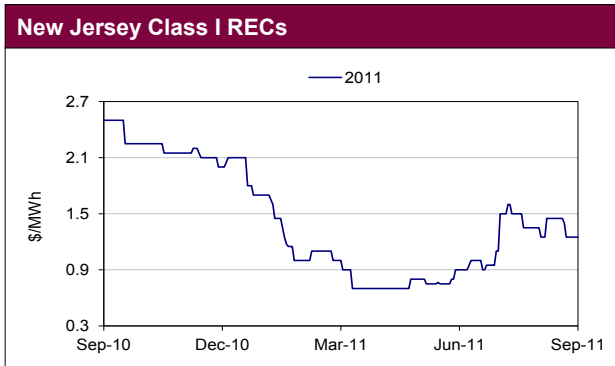
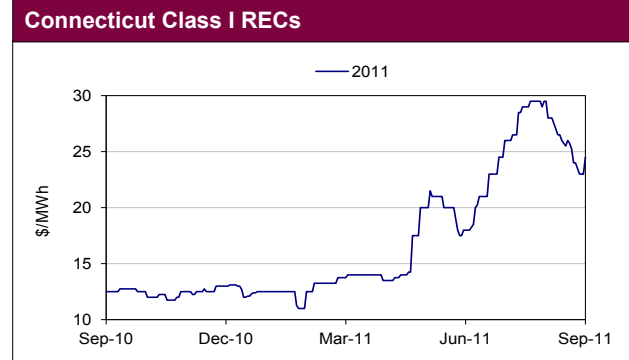
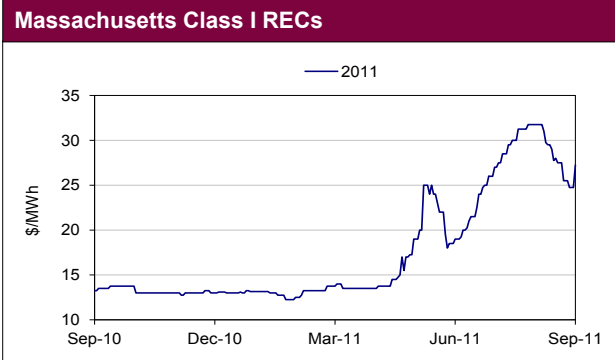
Note: Prices reflect final close of prior week with week-on-week changes.

- Massachusetts Class I renewable energy certificate (REC) prices rose on 16 September after National Grid issued a solicitation for 2011 and 2012 RECs. The request for proposals includes 350,000 vintage 2011 and 150,000 vintage 2012 Class I RECs. Following over-the-counter trading at \$25/MWh midweek, the 2011 vintage was heard to trade at \$25.20-27/MWh at the end of the week.

- Futures contracts for 2011 Class I RECs traded actively on the Chicago Climate Futures Exchange, and spot prices ranged \$23-\$24.50/MWh, closing at \$24.50/MWh on 16 September. Futures contracts for 2012 traded at \$23/MWh on 14 September, and RECs for the same vintage traded on the spot market for \$24/MWh on 16 September.

- The New Jersey Board of Public Utilities held a public meeting to discuss “next steps” for solar renewable energy certificate (SREC) policies, including the possibility of setting a floor price and whether to allow trading across New Jersey’s borders. New Jersey SREC prices for the 2011 compliance year held steady throughout the week at \$635/MWh. The 2012 compliance year started the week at \$195/MWh and rose to \$201/MWh on 16 September.

- Texas REC prices for 2011 compliance held at \$1.35-\$1.40/MWh throughout the week, and traded at \$1.375/MWh on 16 September.



North American carbon trading

RGGI CO <sub>2</sub> allowances				\$/st
2009-2011	Bid	Ask	Price	Change
Spot	1.83	1.88	1.86	—
Dec-11	1.83	1.88	1.86	—

Note: Prices reflect final close of prior week with week-on-week changes.

Climate Action Reserve				\$/mt
2009	Bid	Ask	Price	Change
California-compliant CRT	8.50	11.00	9.75	-0.25
Non-California-compliant CRT	1.00	3.50	2.25	—

Note: Prices reflect final close of prior week with week-on-week changes.

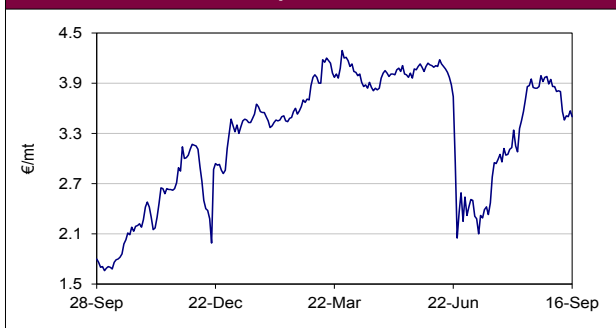
- EPA administrator Lisa Jackson said the agency will miss the court-ordered 30 September deadline to propose rules that would regulate GHGs from power plants. Jackson said a new schedule will be announced "soon."
- Activity in the California carbon market slowed and allowance prices shed \$2.50/mt last week as participants digested the final set of draft rules for the cap-and-trade program that were released on 12 September. The latest set of rules did not make any significant changes to the program's structure, but the process

for converting existing carbon offsets into early action credits was streamlined and the methodology for allocating allowances to the refining sector was clarified.

- Prices for RGGI CO<sub>2</sub> allowances moved higher mid-week after four block trades for current compliance period allowances cleared on the Chicago Climate Futures Exchange at \$1.90/short ton for delivery in December 2011. RGGI will hold a stakeholders meeting on 19 September to discuss ways to improve the faltering program during the next compliance period.

International CERs

CO<sub>2</sub> EU ETS/CDM CER spread



- The secondary certified emissions market (CER) tracked the EU emissions trading scheme (ETS) allowance market higher and eventually outpaced it last week. The CER December 2011 contract stood at €8.68/metric tonne CO<sub>2</sub> equivalent (CO<sub>2</sub>e) on 16 September, a €0.34/mt increase over the week. The December 2013 contract gained €0.57/mt CO<sub>2</sub>e or just over 6pc.
- The discount of the CER December 2011 contract to its allowance counterpart tightened by €0.06/mt to €3.50/mt, while the discount of the CER December 2013 market narrowed by €0.27/mt to €3.80/mt.



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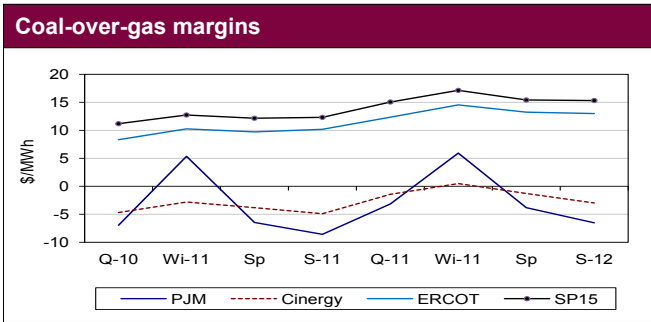
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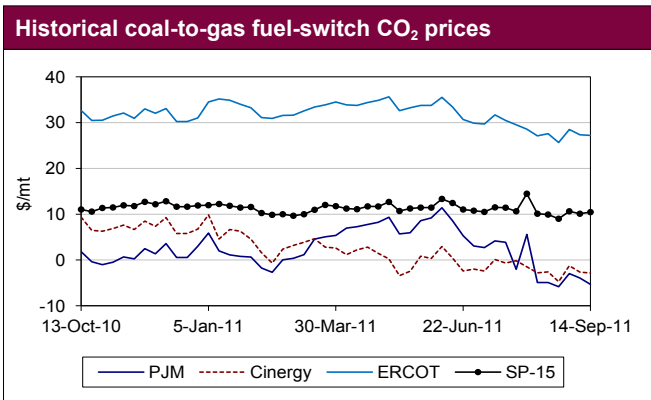
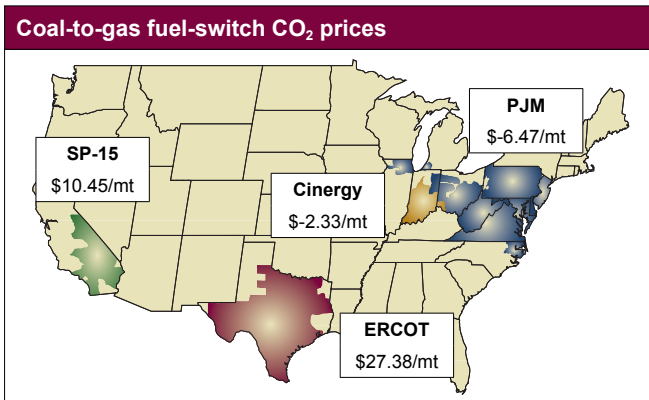
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CO<sub>2</sub> price impacts on existing coal and natural gas generation — Calendar 2013

Generation fundamentals		\$/MWh			
Region	PJM	Cinergy	ERCOT	SP-15	
Power price	56.50	45.25	50.20	55.60	
Coal fuel cost, \$/mmBtu	4.50	4.23	2.55	2.30	
Margin	11.50	2.95	24.70	32.60	
Change on week	-1.40	-0.50	0.10	-1.15	
Gas fuel cost, \$/mmBtu	5.29	5.14	4.91	4.46	
Margin	14.18	4.13	10.92	19.92	
Change on week	-0.70	-0.42	0.18	-1.57	
Coal over gas margin	-2.68	-1.18	13.78	12.68	



Region	Coal-over-gas margins under potential CO <sub>2</sub> prices											\$/MWh
	\$/metric tonne CO <sub>2</sub> e											
	\$0	\$10	\$20	\$30	\$40	\$50	\$60	\$70	\$80	\$90	\$100	
PJM	-2.68	-6.82	-10.96	-15.11	-19.25	-23.39	-27.53	-31.68	-35.82	-39.96	-44.10	
Cinergy	-1.18	-6.25	-11.31	-16.38	-21.45	-26.51	-31.58	-36.64	-41.71	-46.78	-51.84	
ERCOT	13.78	8.75	3.72	-1.32	-6.35	-11.38	-16.41	-21.44	-26.48	-31.51	-36.54	
SP-15	12.68	0.55	-11.59	-23.72	-35.85	-47.98	-60.12	-72.25	-84.38	-96.52	-108.65	



Coal-to-gas fuel-switch CO <sub>2</sub> price for different plant efficiencies										\$/mt
mmBtu/MWh		Coal Heat Rates								
		8	9	10	11	12	13	14	15	
Natural Gas Heat Rates	6	6.25	-0.39	-7.03	-13.67	-20.31	-26.95	-33.59	-40.23	
	7	16.15	9.51	2.87	-3.77	-10.41	-17.05	-23.70	-30.34	
	8	26.05	19.41	12.76	6.12	-0.52	-7.16	-13.80	-20.44	
	9	35.94	29.30	22.66	16.02	9.38	2.74	-3.90	-10.54	
	10	45.84	39.20	32.56	25.92	19.28	12.64	5.99	-0.65	
	11	55.74	49.10	42.45	35.81	29.17	22.53	15.89	9.25	
	12	65.63	58.99	52.35	45.71	39.07	32.43	25.79	19.15	

Methodology

Margins refer to a measure of power generation profitability. Here they represent spark spreads and are calculated from Argus regional assessments of power and fuel prices. A positive spark spread indicates a power price sufficient to cover fuel costs. **Coal-over-gas Margins** track the difference in theoretical profitability between coal- and gas-fired generation. Argus provides **Coal-over-gas Margins Under Potential CO<sub>2</sub> Prices** to show the potential impact of greenhouse gas regulation on existing coal units. These hypothetical CO<sub>2</sub> prices are applied both to coal and gas units, and do not assume the use of carbon capture and sequestration technology. Because gas produces less CO<sub>2</sub> per MWh than coal, the coal-over-gas margin narrows as CO<sub>2</sub> prices increase. **Coal-to-gas Fuel-switch CO<sub>2</sub> Prices** reflect the CO<sub>2</sub> price at which coal and gas generation are equal. Beyond this threshold, gas is more economical than coal. Coal-to-gas fuel-switch CO<sub>2</sub> prices are calculated at a regional level based on emissions intensities, assumed heat rates, and known generation fleets. Coal-to-gas fuel-switch CO<sub>2</sub> prices are also provided on a stand-alone plant basis, using assumed heat rates and national averages for emissions intensities and assessed commodity prices. The heat rates of 10 mmBtu/MWh for coal and 8 mmBtu/MWh for gas are highlighted as representative units.