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## California Set To Launch Ambitious Cap And Trade System As Federal Efforts On Pollution Control Falter

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# California Set To Launch Ambitious Cap And Trade System As Federal Efforts On Pollution Control Falter

The big news for U.S. carbon policy in 2011 is that some states are taking the lead from the federal government in enacting legislation to limit carbon emissions and other greenhouse gases, volunteering themselves as a laboratory for a regulatory experiment that nationally has been put on hold, according to Standard & Poor's Ratings Services. Just two years ago federal carbon legislation looked imminent. Today, however, we believe that national efforts to pass carbon cap and trade legislation do not appear likely to succeed.

In our view, this has allowed some states to move ahead with their own carbon reduction initiatives. In recent months several have announced plans for cap and trade programs to reduce greenhouse gas emissions. At the end of 2010, Massachusetts set its statewide greenhouse gas emissions limit for 2020 to 25% below 1990 levels. New Mexico took a step in the same direction last month when a state environmental board approved regulations for a cap and trade plan, although the newly elected governor fired the board in early January, derailing the process at least for now. Other states, such as Hawaii, also have aggressive programs to reduce carbon dioxide emissions, although without cap and trade.

But in our view no state has leapfrogged past federal efforts faster than California, which, despite its economic difficulties, put in place final regulations in December 2010, to start a cap and trade market in 2012. California's cap and trade is just one part of a larger number of programs the state adopted under Assembly Bill 32 (AB32), a sweeping carbon regulation bill that was signed into law in 2006. AB32 requires California to reduce greenhouse gas emissions to 1990 levels by 2020. The state expects to reach more aggressive goals of 80% below 1990 levels by 2050.

Given that California is by itself the world's eighth-largest economy, the scope of its cap and trade program would make it the second-largest economy in the world to operate a carbon emission allowance market behind Europe, which began carbon regulation in 2005. (A cap and trade program limits total greenhouse gas emission by issuing permits. Allowances are limited in supply and companies must constrain their emissions to match their allowances or else pay for more of them—an incentive to cut emissions and avoid penalties.)

This is the first in a series of articles from Standard & Poor's Ratings Services that will, from time to time, examine state-level plans for carbon regulation and our view of their implications for credit quality. This article provides an overview of the newly approved framework in California, although we can't fully assess the potential credit effect for companies until all the rules are finalized. We provide here our preliminary observations on the impact of the state's cap and trade plan and other greenhouse gas regulations on the two largest affected sectors, electric utilities and refiners, which together produce an estimated one-third of the greenhouse gas emissions in the state.

## Carbon Regulations Could Hurt Some Refiners' Credit Quality

In our view, central to assessing the credit impact is the ability of producers to pass on any additional costs of regulation to their customers. This ability likely is limited for refiners whose business has already suffered due to California's weak economy. We expect that cap and trade will require refiners to purchase over time a substantial

number of carbon credits on the free market. That could, we believe, hurt the long-range profitability of California refineries, and increase their earnings volatility.

Depending on how the state allocates allowances—a significant factor that hasn't yet been determined we believe the costs for different companies could vary substantially. Those allowances will be key to determining the financial ramifications for the refiners. We understand that the California Air Resources Board (CARB) staff, which is responsible for implementing carbon regulations, plans to address these matters in coming months. It's our understanding that free allowances are intended to be sufficient to cover almost all refiner emissions only in 2012. On balance, however, we view carbon regulation as a potential adverse development for the credit quality for those oil refining companies with significant operations in California.

Refineries will be affected by the two major phases of cap and trade. First, direct refinery emissions of carbon dioxide will come under regulations as of 2012. Second, in 2015, refiners will also need to factor emissions stemming from the use of the transportation fuel they produce—primarily automobile emissions.

In our view it's likely that the pace at which free allowances are to be scaled back after 2012 will significantly exceed further carbon dioxide emission reductions, which will force refiners to purchasing allowances to fill the gap. If that price is at or near the initial floor of \$10/ton set by AB32, this incremental expense should be manageable. But if the price approaches or exceeds the levels CARB initially envisages for reserve allowances (\$40-50/ton in 2012 and rising thereafter), we believe the costs could be quite burdensome in some cases.

We believe the ramifications of the transportation-fuel standards that are to take effect in 2015 could be far reaching. The volume of carbon dioxide emissions from fuel use greatly exceeds that from refinery operations. Also, refiners seemingly have limited ability to directly reduce the carbon dioxide content in transportation fuel. In October 2010, the Environmental Protection Agency (EPA) announced that it would allow up to 15% gasoline blended with ethanol, up from 10% at present, a move that we observed received a mixed response. Some refiners have invested in additional ethanol capacity, while others have resisted any encroachment on gasoline. In any case, the EPA limited use of 15% ethanol fuel to vehicles built since 2007.

We believe that the need to purchase credits could impinge on the longer-range profitability of California refineries and add to earnings volatility. Because all refiners will be operating under the same rules, incremental AB32-related costs could theoretically be passed along to the consumer. However, unlike regulated electric utilities, there is no provision for cost recovery for the refiners. We believe that the actual ability of the refiners to offset higher costs with price increases will depend on complex future market dynamics that can't now be predicted.

We believe that new carbon regulations and cap and trade raise the greatest concern for those refining companies with significant concentrations of operations in California—such as Tesoro Corp. (BB+/Negative/--), Valero Energy Corp. (BBB/Negative/--), and Alon USA Energy Inc. (B/Watch Neg/--). California accounts for about 40%, 12%, and 22% of these companies' refining capacity, respectively (based on their most recent disclosures, and adjusting for a divestiture in the case of Valero). These companies have only what we consider to be a modest degree of diversification outside of their refining businesses.

Some of the large integrated energy companies—BP PLC (A/Negative/A-1), Chevron Corp. (AA/Stable/A-1+), ConocoPhillips (A/Stable/A-1), ExxonMobil Corp. (AAA/Stable/A-1+), and Royal Dutch Shell PLC (AA/Stable/A-1+)—also have substantial refining capacity in California. In the case of Chevron, this amounts to 24% of its worldwide operable refining capacity (based on 2009 information). However, in all these cases, the

profitability of the companies' refining operations are less than those produced by their highly profitable upstream/exploration and production operations. As a result, we currently view heightened challenges to the refining segments as unlikely to harm overall credit quality.

## **Electric Utilities Likely See Modestly Negative Credit Effects And Heightened Business Risk**

We expect the cost implications of AB32 for electric utilities to be potentially large. Nevertheless, we expect that the regulated nature of the industry and its business structure should permit utilities to pass along their increased costs to ratepayers. As a result, we see the potential credit implications for the industry as modestly negative. The three largest investor-owned utilities in California are Pacific Gas & Electric Co. (PG&E; BBB+/Stable/A-2), Southern California Edison Co. (BBB+/Stable/A-2), and San Diego Gas & Electric Co. (A/Stable/A-1), all of which the California Public Utilities Commission (CPUC) regulates.

We expect the CPUC will treat carbon costs as any other operating expense, allowing these utilities to collect them, including the cost of procuring carbon allowances, in their rates. Publicly owned utilities, such as Los Angeles Department of Water and Power (AA-/Stable) and the Sacramento Municipal Utility District (A+/Stable), and numerous irrigation districts and smaller public utilities set their retail electric rates autonomously through municipal or local boards and have authority to adjust rates to reflect additional costs. As a result, we believe both investor- and public-owned electric utilities should maintain their existing financial profiles.

However, we expect that California's suite of carbon initiatives, including cap and trade, could add to electric utility companies' business risks, although we don't currently expect this incremental risk to result in adverse rating actions.

One risk we see is that the costs of carbon regulation are likely to push retail electricity rates higher. California rates are already among the highest in the U.S., averaging 13 cents/kWh in 2008, according to the Energy Information Administration (EIA). As a result, we believe that carbon regulation could become a tipping point in the manageability of rates for Californians, which would have economic and political ramifications statewide.

We are not able to estimate rate increases at the major state electric utilities affected by cap and trade. Because each utility's carbon footprint is different, the CARB has been wrestling with how to equitably distribute allowances. Although total allowances for the entire sector have been set, we project that individual companies are not likely to know their allocations until mid-2011.

We don't expect imminent retail rate hikes due to cap and trade because initially utilities will receive most of their allowances for free. We believe that investor-owned electric utilities could even see ratepayer benefits in the initial years, as allowance allocations could end up being generous relative to what the sector requires. And if utilities can make proposed aggressive investments in energy efficiency and renewable generation, there could even be residual allowances available for later auction. But as with the refineries, as emission restrictions tighten, we expect the ratio of free allowances to total allowances to decline.

Another potential business risk we see is whether the design of the cap and trade program will result in unintended consequences. The complexity of the California cap and trade market in our view resembles the complexity of the model developed in the late 1990s to deregulate retail electricity and introduce wholesale power sellers. In our view,

that experiment financially harmed electric utilities throughout the western U.S. and contributed directly to the bankruptcy filing of PG & E in 2001 and the near bankruptcy of Southern California Edison when wholesale power costs rose far above those some electric utilities had agreed to under a rate freeze.

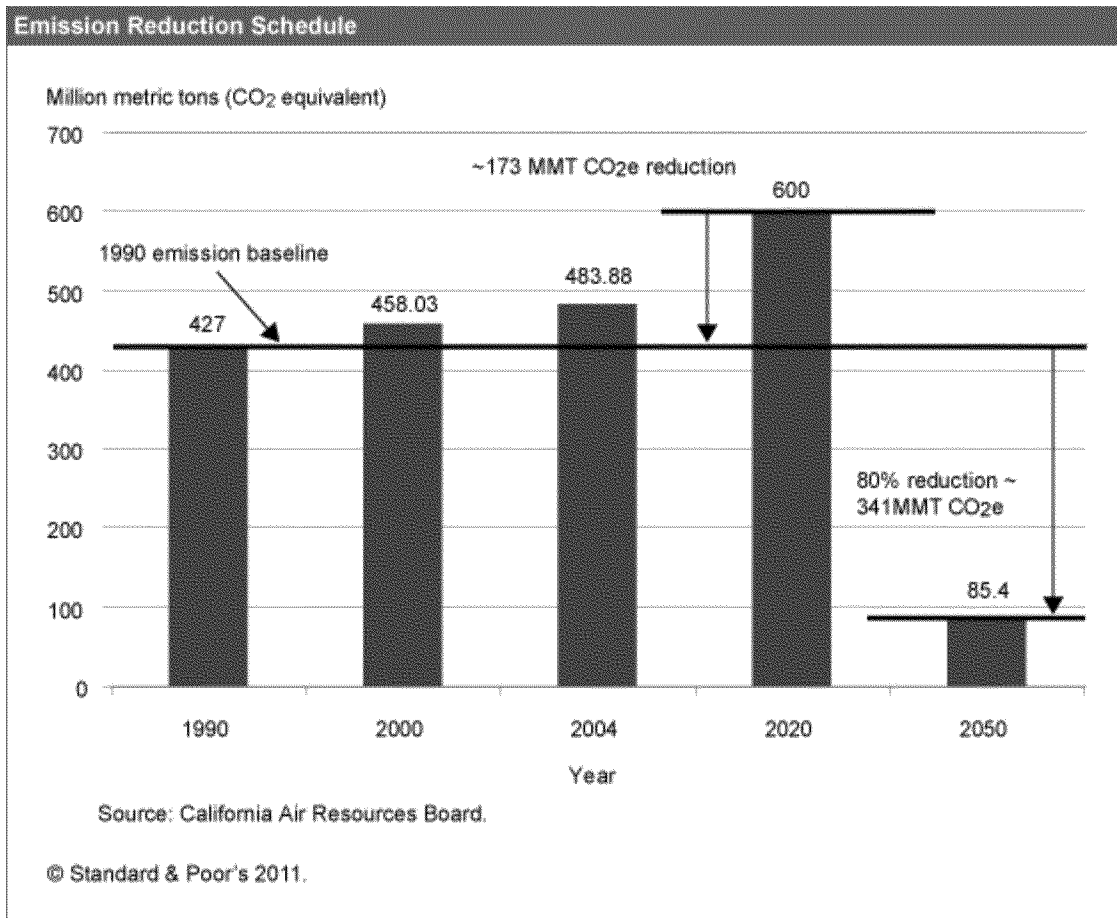
Another source of possible pressure we see for electric utilities is the consequences carbon regulation will have for the state's economy. As the lone western state that is likely to have cap and trade in place in 2012, we believe there is a risk that some California businesses will relocate their operations to other states to avoid the additional cost burdens of carbon regulation (referred to 'leakage' by carbon experts). While not all companies can feasibly do this (refiners and electric utilities are key examples) and we expect that the free allocation of allowances may help minimize leakage, if the economic burdens of cap and trade become too great, we believe that some businesses could leave, resulting in lost sales that could strand some of the investments electric utilities are making to meet future demand.

## **The State's Goals For 2020**

California has set a 2020 carbon emission limit of 427 million metric tons (MMTCO<sub>2e</sub>). In our view, this goal appears manageable relative to the state's estimated greenhouse gas gross emissions in 2008 (the last year for which data is available) of 478 MMTCO<sub>2e</sub>. In simplified terms, reaching this goal would require an 11% reduction in the state's last measured emissions for the nine years of the program, beginning in 2012.

But we believe greenhouse gas emissions are closely associated with economic growth. According to CARB data, for example, California greenhouse gas emissions increased about 4% in 2000-2008. Including future economic growth, however, CARB estimates that for California to achieve its 2020 target, emission levels will need fall 15%-30% from the forecasted 2020 levels on a 'business as usual' case. This translates into a total reduction of approximately 173 MMTCO<sub>2e</sub> (see chart 1).

Chart 1



What is a 173 MMTCO<sub>2</sub>e equivalent to? It's slightly more than the carbon emissions of all cars on the road in California in 2008. The state's goal would be as if every passenger car in California were taken off the road in nine years. Another way to think about the reduction is in terms of electricity consumption. In 2008, California's electricity consumption totaled 268 million megawatts-hours (MWh), which produced about 116 MMTCO<sub>2</sub>e, according to EIA and CARB data. So even a year-long 'lights out' for California would only meet around 67% of the 2020 goal. Of course, California does not expect to achieve emissions reductions in a single year, but we believe these comparisons provide a sense of the magnitude of what the state is trying to accomplish.

We think it's also important to realize that 173 MMTCO<sub>2</sub>e is somewhat speculative because it is the level of reduction that the state economy is expected to achieve through AB32, relative to what 2020 forecast emissions would be if no carbon regulations existed--a number that we believe is inherently fraught with uncertainty. As shown in table 1, not all of these reductions to come from cap and trade but from other components of AB32 that mandate investment in energy efficiency, renewable generation, and stricter fuel standards, to name but a few.

Table 1

Policy Measures Of AB32	
Energy	33% renewable portfolio standards
	Million Solar Roofs Programs
	Increase in energy efficiency investments

Table 1

Policy Measures Of AB32 (cont.)	
Construction	Building, appliance and new construction efficiency
Transportation	Reduce greenhouse emissions in passenger vehicles 30% by 2016
	Low carbon fuel content (10% less carbon content)
	Clean Car Standards (AB1493)
Industry	Energy efficiency/co-benefits audits
	Investments in cost-effective efficiency measures
Other	Forest sequestration
	State government emissions reduction of 30%

## Cap And Trade 101

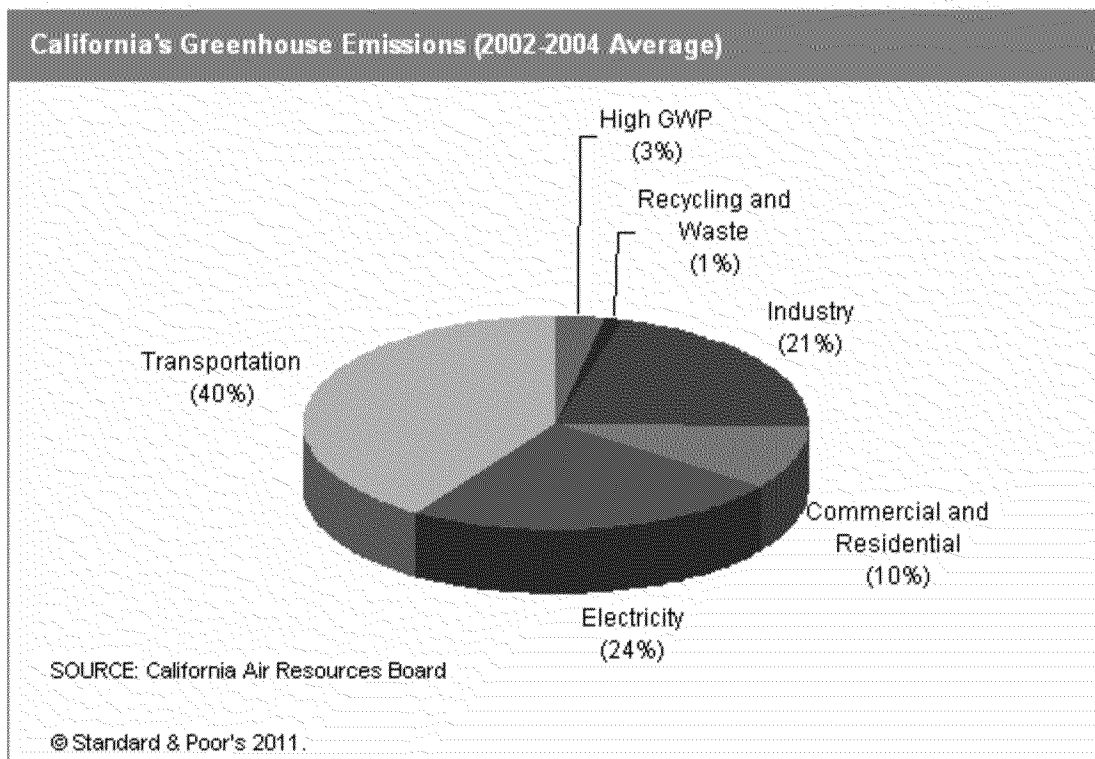
Cap and trade is a market-driven program that allows the buying and selling of carbon allowances, tradable permits that allow holders the right to emit 1 metric ton of carbon dioxide (MTCO<sub>2</sub>e) into the atmosphere. (While carbon dioxide emissions are typically thought of as synonymous with the term 'greenhouse gas' there are actually six additional emissions that are generally considered to contribute to global warming. The California regulation encompasses all of these emissions, which are measured as carbon dioxide or its equivalent.) Under a cap and trade model, companies that emit greenhouse gasses are required to acquire--through auction, bilateral purchase, or free allocation by the regulator--enough allowances to match their total emissions. A cap and trade program aims to curtail carbon emissions by issuing a limited number of tradable allowances equal to a "cap," or the total amount of greenhouse gases that policymakers determine is desirable.

These allowances must be turned in annually or at other specified times to the regulator that controls the number of allowances in the marketplace and gradually reduces them, theoretically reducing emissions. But because the company can also trade or sell allowances after they are issued, no individual polluter has a definite, set emissions limit and can purchase allowances beyond its initial allocation if its emissions exceeds its allowances over time. Market supply and demand determine allowance prices. The logic of a trading program rather than just a cap on emissions is to allow companies that are more flexible, or more efficient in cutting their carbon emissions, to potentially profit from the sale of allowances to those whose operational or cost structure makes it more practical to buy allowances rather than reduce emissions.

## Cap And Trade California Style

While cap and trade does not target all California industries (most notably agriculture), ultimately the program seeks to include many of the major sources responsible the state's greenhouse gas emissions (see chart 2).

Chart 2



We understand that the state will phase in the program in two steps (see table 3). In 2012, the program initially will focus on large greenhouse gas emitters that have little ability to relocate out of state: the electric utilities and refiners. This strategy is aimed at minimizing potential in-state job losses while yielding a true net reduction in carbon emissions. In-state electricity generators, out-of-state generators that deliver energy to California's power grid, carbon dioxide suppliers, and large industrial concerns will be required to participate in the program if their emissions are above 25,000 MTCO<sub>2</sub>. These sectors account for an estimated 37% of carbon emissions in the state.

After 2015, a second phase begins in which additional sectors are required to enter the program. Most prominent will be transportation fuel usage. CARB estimates that once phased in, the cap and trade program will cover some 360 businesses, representing 600 separate facilities and will cover an estimated 85% of the state's emissions.



Table 2

Scope Of Emissions Reductions					
	Year	Forecast emissions in Cap and Trade program	Emissions allowed under the cap (MMTCO <sub>2</sub> e)	Cummulative reductions/ abatement needed (MMTCO <sub>2</sub> e)	
Reductions 2012 - 2014 are about 2% annually	2012	165.8	165.8	0	<b>Compliance period 1</b> Electricity sector and industry facilities are under cap
	2013	167.3	162.8	4.5	
	2014	168.1	159.7	8.4	
After 2015 cap decreases by 3% annually	2015	460.7	394.5	12.2	<b>Compliance period 2</b> Adds new sectors (fuel and gas suppliers) to cap; allowances jump to accommodate new sector
	2016	406.9	382.4	24.5	
	2017	407.6	370.4	37.2	<b>Compliance period 3</b>
	2018	407.6	358.3	49.3	
	2019	408.4	346.3	62.1	
	2020	408.8	334.2	74.6	

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Table 3

Timing And Point Of Regulation By Emissions Source		
Sources of emissions	Point of regulation	Year entering the program
In-State Electricity Generation	Those who generate electricity in-state and deliver it to the California electricity grid	2012
Imported Electricity	First deliverers of electricity to the California electricity grid	2012
Industrial-Combustion and Process Emissions	The source for large stationary combustion and process emission sources	2012
Carbon Dioxide Suppliers	Those who supply carbon dioxide	2012
Commercial/ Residential/Small Industrial Combustion	Where fuel is distributed, including natural gas local distribution companies (LDCs) and natural gas transmission pipelines	2015
Liquefied Petroleum Gas Combustion	Those who import or produce liquefied petroleum gas, including fractioners or refiners	2015
Transportation Fuel Combustion	Enterers and position holders of transportation fuels, and producers of biomass-derived fuels	2015

Source: CARB Staff Report: Initial Statement of Reasons (ISOR) pg. II-11

## The Key Question Of Allowances

Regulators have already established an annual allowance budget for the sectors that are required to participate in the program. As shown in table 2, the cap reduces linearly at about 2% each year in the first phase (2012-2015) and then 3% each year thereafter.

As shown in table 2, there is a notable spike in the emission allowances in 2015 that we think may at first blush seem counter-intuitive but occurs because in that year CARB is scheduled to include the transportation sector in program. While this segment includes interstate aviation, railroads, ships, and commercial boats, the vast majority of transport sector emissions are from passenger cars. Specifically, passenger vehicles are about 25% of the transportation sector and 39% of the total state economy. We believe that trying to bring each vehicle owner into cap and trade would make the program unmanageable. At the same time, we recognize that it would be difficult to make a dent in emissions without tackling this segment.

AB32 tackles automobile emissions indirectly by making fuel suppliers responsible for these emissions. To cover emissions from transport-fuel combustion, the program will regulate fuel suppliers based not only on the quantity of fuel they produce, but also on the emissions of the cars and other vehicles that use that fuel. As a result, allowances awarded in 2015 jump to reflect that.

Initially the regulators will give most allowances to companies that must participate in cap and trade. If emissions exceed the allocation, the emitter can either buy additional allowances in quarterly auctions—the only way utilities will be allowed to purchase them—or from a third party. An emitter may also purchase offsets. These are positions in environmentally advantageous projects that count toward meeting emissions requirements. They may include reforestation projects, livestock manure digester projects, and projects that recycle ozone depleting substances. As with an allowance, each offset credit will be equal to 1 MTCO<sub>2</sub>. In California, an emitter can use offsets for up to 8% of its compliance obligation.

CARB will issue allocations to emitters annually. Emitters must annually surrender allowances and offsets equal to 30% of their emissions reported from the prior year. They must turn in the balance at the end of a three-year compliance period. This allows companies to manage year-to-year variations in their emissions profile. (For example, electric utilities can generate more emissions than otherwise in years where hydropower is low and fossil fuel generation fills the shortfall.) Once the three-year compliance period ends, CARB will permanently retire the surrendered allowances. While it provides flexibility, this rule may make it more difficult to get a complete picture of the overall supply-and-demand balance of allowances and offsets until three years into the program.

Because an emission allowance can be thought of as a license to pollute, it has an intrinsic value. In addition to the companies or entities that need them, financial institutions, brokers, and environmental interests may want to purchase allowances to retire, trade, or sell them. Any entity that does so, must register with CARB.

## First Allowance Auction Nears

CARB will hold an auction four times a year to sell allowances to the emitters and to interested parties. The first auction is scheduled to be held on Feb. 14, 2012. Subsequent auctions will be in the first month of each quarter. CARB will offer into each auction one-fourth of each year's non-allocated allowances. Investor-owned utilities such as PG & E, Southern California Edison, and San Diego Gas & Electric will be required to monetize their allowances

by selling (referred to as consigning) them into the auction. Given the size of their emissions, these allowances are likely to provide immediate liquidity to the market.

During 2012-2014, we expect that more consigned allowances could exist (e.g. allowances electric utilities are required to offer in the auction) than non-allocated allowances. But after 2015, we estimate that the auction will likely become much larger, due to the addition of the transportation sector and will be made up of largely non-allocated allowances.

The auction will have a floor price but no ceiling price. The initial floor price will be set in 2012 at \$10/metric ton but will increase by 5% each year plus the cost of inflation. There will be no price cap on auction results. Rather than designating a maximum allowance price, CARB proposes to use a reserve bank to manage upward pressure on prices. Entities that are required to participate will be able to purchase allowances in the reserve bank at fixed prices of \$40-\$50/metric ton in 2012.

## **How Many Allowances And In What Manner Will CARB Issue Them?**

California has already projected that it will distribute more than 2.7 billion allowances in 2012-2020. Based on descriptions in the California regulations, in the first three years of the program we expect that most industries will receive about 90% of their allowances for free. But given that some details will not be put into place until July 2011, we can't yet know precisely how many allowances a particular company or facility will receive.

Industrial companies will receive allowances based on a formula that is output based—e.g., the more production a facility has, the more allowances it will receive. But the allowances will not be allocated one for one (e.g. one allowance for every MTCO<sub>2</sub>) and will instead be adjusted by several factors, the most important of which is an efficiency index, a measure of how carbon-intensive a facility is relative to its peers. More efficient facilities will be given more allowances which will reward past efforts to reduce emissions. So Company A could be better positioned than Company B to manage cap and trade costs if it's given a better efficiency ranking. The design of the efficiency ranking will thus be a key factor in determining allocations.

Some significant emitters will also receive more allowances (up to 100% of their expected emissions) if CARB deems them to be highly competitive and have limited pricing power. The industries are likely to include cement, glass, and paper manufacturing. Because they are at risk of becoming uncompetitive or may locate out of the state in response to cap and trade, they may get additional allowances through this 'assistance factor.'

The allowance framework for electric distribution utilities (defined as any entity that provides retail electricity to California ratepayers) is in our view less clear. The initial allocation for the sector in 2012 is 89 MMTCO<sub>2</sub>, or 90% of its 2008 emissions, excluding 11.1 MMTCO<sub>2e</sub> of emissions from cogeneration facilities. CARB expects to increase allowances to the sector to reflect co-generation purchases, but an exact number isn't set.

We understand that CARB is wrestling with how to address the widely disparate emissions profiles of the state's electric utilities. Generally speaking, Southern California's utilities generate more coal-fired power than Northern California's, which use more hydropower. CARB is considering two broad allocation methods—one based on electricity sales, and the other based on historical emissions.

The table 3 shows the carbon intensity of the major electric utilities in the state. If allowances are assigned based on electricity sales, smaller electric utilities with significant coal contracts like Los Angeles Department of Water and

Power would be disadvantaged, and rate hikes could be large. Allocating allowances based on historical emissions would resolve this problem, but would fail to reward electric utilities that have made early efforts to reduce carbon emissions.

Table 4

Emissions of Major California Utilities, 2007			
	MTCO <sub>2</sub> e (in thousands)	Carbon intensity (MMTCO <sub>2</sub> e/Sales)	Sales (Mil. \$)
Pacific Gas & Electric Company	22,908.50	1.7305108	13,238
Southern California Edison	24,026.11	2.2930052	10,478
Sacramento Municipal Utility District	4,379.34	3.3787922	1,296
San Diego Gas & Electric	7,448.11	2.6115385	2,852
Los Angeles Department of Water and Power	16,230.82	6.2426213	2,600
Northern California Power Agency	48.75	0.1572251	310

Source: CARB and EIA.

## Why California, Why Now?

The promise of carbon regulation in California is not new. Arnold Schwarzenegger, former Governor, regarded the passage of AB32 as one of his signature accomplishments. AB32 envisioned that a cap and trade model would be a central component of the plan.

But the recession, the state's budget difficulties, and a deep housing crisis led to calls for a delay in cap and trade. Republican gubernatorial candidate Meg Whitman promised if elected to re-evaluate the timeline for AB32. Separately, refiners and other petroleum industry interests sponsored a November ballot initiative, Proposition 23, which would have suspended greenhouse gas reduction plans until unemployment (12.4% in November) fell to lower levels. But the proposition was defeated (only 38% of California voters backed it). And with the election of Jerry Brown who has been a vocal supporter of carbon regulation, we see limited roadblocks for cap and trade to move forward.

State policy makers see California as a change catalyst. As part of its statement of reasons for pursuing a cap and trade program, CARB staff noted, "Action taken by California to reduce emissions of greenhouse gases will encourage other states, the federal government, and other countries to act."

There are, of course, big questions remaining in California's plan. We don't yet know how the allowances will be allocated to emitters, nor the degree to which industries will face costs which cannot be passed along to customers. And amid a host of technical questions yet to be resolved, it's uncertain whether cap and trade will achieve its goal of reducing greenhouse gas emissions when California is the only state to impose carbon costs on industries. In our view, the long-term question for investors, for Californians, and for the U.S., is whether, all things considered, those effects will be worth the price.

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