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THE CALIFORNIA CARBON RUSH

The Golden State is betting that its new carbon trading scheme can create jobs and cut emissions. Is that California dreaming?

BY PETER HENDERSON
SAN FRANCISCO, FEB 17

UNDER CALIFORNIA'S NEW carbon trading system, big polluters will be paying through the nose for the privilege.

And so will everyone else in the state.

The basic premise is "no pain, no gain" -- when the price starts to pinch, that will spur innovation and California will lead the world in green technology. Or at least that's the plan.

The Carbon Rush officially gets underway next year. Power plants, factories and other companies will have to obtain an "allowance" permit for every ton of carbon dioxide they produce. Allowances will be sold at state auctions and on an open market.

Most of the financial sting is being backloaded. The program begins with a big giveaway, with the state handing out most permits free -- a "soft start," is how state officials term it.

This new market will rapidly expand, beginning at just under $2 billion and rising to nearly $10 billion in 2016, according to

estimates from Point Carbon, a Thomson Reuters company focusing on carbon markets.

The state is expected to reap billions of dollars in revenues, but the side-effects are hardly trifling. And it is only part of an array of programs to combat climate change. Cap and trade is guaranteed to push up gas prices for consumers and, critics say, some businesses may be driven away by the additional costs in an already high-cost state.

And that's assuming it will work. The world's biggest existing carbon market, the Emissions Trading Scheme in Europe, has been plagued by problems, from mispricing to theft, and provides no clear model for success.

Moreover, California has its own unique obstacles to overcome -- not the least of which is that its companies are already greener than most.

The plan will have an impact that extends well beyond the state's borders. If the carbon market can create jobs, cut emissions and operate efficiently, other states would be more likely to give it a whirl. If it flops, they won't.

CARBON TRADING HERE WE COME

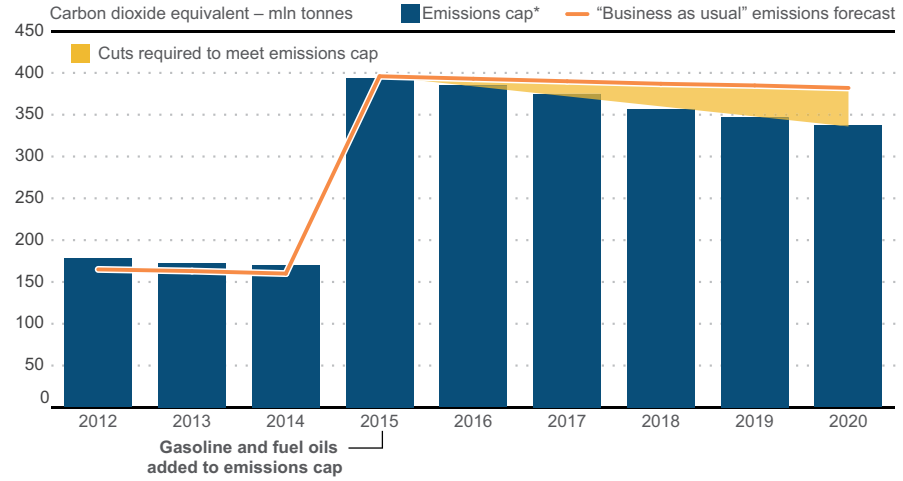
CALIFORNIA AIMS TO cut greenhouse gas emissions to 1990 levels by 2020, which is no small feat. Higher prices, say the plan's backers, will help. As the theory goes, if gasoline costs more, people will get high-mileage cars; if electricity prices rise, business and homeowners will buy energy-efficient light bulbs; if there is a financial penalty to burning coal, power plants will be more inclined to use natural gas or build a wind farm.

The cap-and-trade plan will put a limit on total emissions of greenhouse gases, and year by year decrease that limit, which is expressed in carbon allowances. Each metric ton of emissions will have to be covered with an allowance, which may be given away by the state, or sold directly by the state or on a secondary market -- that is, an exchange. Big polluters must account for their own emissions. Small polluters -- such as cars -- will see the effect in prices they pay for fuel and electricity.

By 2016 California's market will be about a fifth the size of Europe's, making it the second largest market in the world, Point Carbon estimates. And the state may have company: Three Canadian provinces -- Ontario, Quebec, and British Columbia -- as well as the U.S. state of New Mexico, aim to join California under the auspices of a group called the Western Climate Initiative.

California carbon market real-world effects

California's greenhouse gas market will force real cuts in carbon dioxide and other gases in 2016, according to Point Carbon estimates. The cap-and-trade market expands from factories and power plants to include gasoline and natural gas in 2015.



* Includes offsets
Source: Point Carbon and California Air Resources Board

REUTERS

Reuters graphic/Stephen Culp

GREEN REPUBLICAN: Former California governor Arnold Schwarzenegger led the drive to make the state a leader in green technology. Photo taken January 14, 2011. **REUTERS/ MARIO ANZUONI**

The state will hand out free carbon permits, or allowances, to companies that face out-of-state competition, such as cement makers. Others will have to buy them in state auctions and on the open market.

Prices are expected to start off low, at about $13 a ton -- not high enough to spark much change. But California companies, already among the cleanest and most efficient in the country, will be hard pressed to find cheap, easy ways to cut emissions.

Once giveaways from the state dry up, market prices will spike to $75 a metric ton in 2020, Point Carbon forecasts in a new report (www.pointcarbon.com). A price this hefty, say the plan's champions, could act as a spur for innovation by companies eager to cuts costs.

EUROPEAN MODEL

THE UNITED STATES INVENTED the concept of allowing power plants to trade rights to pollute in 1990. The target then was acid rain. Private industry scrambled to find the cheapest way to clean up the environment -- and succeeded, with the most efficient companies selling permits to the least.

"Some say there was no innovation at all. All the power plants did was switch to lower sulfur coals. And others say there was incredible innovation -- the power plants switched to lower sulfur coals," joked economist Jamie Fine of the Environmental Defense Fund, a major advocate of California's carbon market.

Europe took the next big step with a cap-and-trade carbon market in 2005, but it has stumbled from one failure to the next. Nervous governments with no clear idea of how much greenhouse gases their economies produced flooded their companies with free permits when the plan started.

Factories could not pollute enough to keep up with the supply. Once that became known, in 2007, the price of carbon fell to nearly zero. But power plants managed to profit from the handouts by jacking up rates and selling free permits.

HARNESSING NATURE: Windmills are seen at a wind farm in Palm Springs, California, February 9, 2011. **REUTERS/LUCY NICHOLSON**

By the time regulators had worked the kinks out of the ETS, or Emissions Trading Scheme, the global economy had gone into a tailspin. That did the carbon scheme's work for it: an idle factory does not pollute.

Maarten Neelis, an analyst at carbon consultancy Ecofys, said the European system will ultimately work. "Starting in 2013, it should also become successful in terms of abatement," he said. Since some companies stored up carbon credits when the economy forced them to scale back production, many won't need to do anything until 2014 or 2015, he said.

Indeed, a poll by Point Carbon published early last year showed the carbon market gaining credibility in Europe. A majority of participants for the first time said that the system had caused reductions at their company.

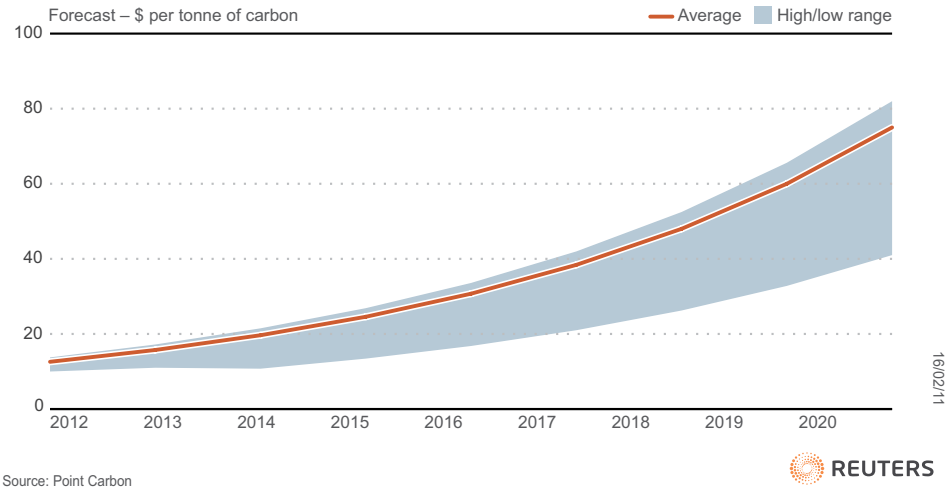
"Simply starting captrade, and having some certainty that carbon will be priced, automatically changes the system" in California said clean energy banker Jim Butcher of Southern California's Renewable Advisors.

Learning from Europe's missteps, California has a clear inventory of carbon emissions and has designed its giveaways to prevent power plants from profiting from them, analysts agree.

With a U.S. federal effort on hold and a U.S. northeast carbon trading scheme trading at almost laughably low prices, California is the U.S. standard bearer.

Price forecasts for California carbon market

California begins regulating greenhouse gases in 2012 using a cap-and-trade system that limits total carbon dioxide emissions. Each ton of emission must be covered with a permit. Permit prices are expected to rise quickly late in the decade.



Source: Point Carbon

Reuters graphic/Stephen Culp

LOW-HANGING FRUIT

U.S. ENERGY SECRETARY Steven Chu likes to say that the low-hanging fruit of a low-carbon economy is energy efficiency, and that the fruit is so low it's lying on the ground for most of the nation.

CARBON SINK: A view of the Garcia River Forest near Longvale, California July 27, 2009. **REUTERS/PETER HENDERSON**

But California ate all that stuff in the 1970s. It has been writing regulations to encourage conservation since then. Practically speaking, that means some of the cheapest ways to cut the carbon footprint of California have already been done.

The first few years will be easy for polluters, because of all the free permits. Prices for contracts to be settled next year are a few dollars per ton higher than the $10 floor set by the state, but nothing that will cause major strain on anybody.

"I don't think the market is expecting pricing to instantaneously rocket up," said Lenny Hochschild, a trader and managing director of Evolution Markets in New York, which trades in Europe and the United States.

But the rocket may be lit with a slow-burning fuse, even if many companies haven't realized it yet -- after all, the regulatory plan was approved in December, with some details still to come.

The state projects that 2017 will be the first year in which the supply of credits will be less than demand. The market will begin to force change at that point. Point Carbon forecasts this day of reckoning a little sooner, sometime in 2016. No one disputes it's coming.

When it does, the changes likely won't be cheap. European power plants often can cut their carbon bills by switching from coal to gas. But California utilities have already done that at most in-state plants.

And other forms of clean technology may not be ready in time to help. Major mandated efforts to build vast solar plants and windmill farms in the deserts and mountains also are behind schedule.

SOLAR SPECIAL REPORT

To see a special report from January 2011 on green on green tension over solar development in California, click here: http://link.reuters.com/vuj84r

BIG BAD CARS: Evening traffic travels south along interstate highway 5 in Carlsbad, California February 8, 2011. **REUTERS/MIKE BLAKE**

Finally, the cap-and-trade market offers a safety valve in the form of credits for projects that offset carbon emissions, such as managing timber lands to cut trees less

"YOU COULD SEE SOME QUITE STICKY TIMES FOR THE MARKET."

frequently, thus soaking up carbon, and capturing methane at dairy farms. But there will not be enough in place in time, either.

That's why Point Carbon is forecasting that prices will jump to between $69 and $87 per ton in 2020, sufficient to tap a containment reserve of credits that the state had hoped would be an unofficial ceiling on the market.

"A lot of power plants and industrial facilities have already reduced their emissions. They burn clean fuels, they have changed their boilers. So for them it's going to be hard to cut further -- unless new technology emerges. For the market what this means is that there are few low-cost abatement options available. That will push prices up all the way to the containment reserve," said Emilie Mazzacurati, head of Carbon Research for North America at Point Carbon.

Barclays Capital commodities analyst Trevor Sikorski sees the same trend, with the price of carbon rising from $16 per ton in the first three years of the program, 2012-2014, to an average of $40 per ton in the second period and $73 per ton in the third period, 2018-2020.

"You could see some quite sticky times for the market," he said.

MARKET MECHANICS

GARY STERN

IT COULD BE WORSE THAN sticky, argues Gary Stern, a power utility executive. Stern lived through the disastrous deregulation of the California power market a decade ago and fears the carbon market will be small and open to manipulation. The state refuses to set a limit for prices. Traders could learn how to corner the market (think Enron) and then hold hostage utilities and factories with no option but to buy sky-high permits on the open market.

State officials say they are working on new safeguards to stop just such efforts and will unveil them in July. California also plans to hire an external monitor to watch the markets -- a key recommendation of Stern. "I'm not saying we would expect the same thing to occur in the emissions markets," he said. "However, we didn't expect that to occur in the electricity markets."

Even if all goes well, nine years of carbon trade won't be enough to end worries about climate change, especially if other states and nations don't pitch in.

"The ambition doesn't add up in terms of what the science is calling for. In fact it doesn't get close," said Greenpeace forest campaigner Rolf Skar, who derides the decision to give away any pollution permits at all. He also turns up his nose at California's plans to let industry pay for "offsets" -- projects to soak up carbon, such as forest management.

Offsets are seen as an important price safety valve -- letting a redwood grow bigger to capture carbon in its wood is cheaper than

DOUBLE DUTY: A parking structure at the University of San Diego California uses innovative solar trees to collect renewable energy from the Sun February 8, 2011. **REUTERS/MIKE BLAKE**

HIGH-TECH TOOLS: Workers assemble a Pyron Solar 90kWp DC CPV generating system that uses water to stay cool and track the sun in San Diego, California February 9, 2011. **REUTERS/MIKE BLAKE**

building a carbon-free power plant, and a substantial portion of California's emissions reductions could come from such schemes.

Owners typically pay contractors to verify such projects -- which is not dissimilar to a bond issuer paying a credit agency to rate it -- but designers say the offset program avoids conflicts of interest and project standards are extremely strict.

MARY NICHOLS

To make a serious dent in emissions, regulators will target transportation. Cars, trucks and planes spew out 40 percent of the state's carbon, more than utilities or industry.

The state's climate change law could have been called the "California Petroleum Use Reduction Act," Mary Nichols, California's top climate change regulator, joked last year.

The state is the third biggest user of gasoline in the world, after the U.S. as a whole and China, but drivers can change emissions very quickly -- by leaving the car in the garage or buying a new, more efficient, car.

"You are just trying to get people to drive less, effectively, which is probably going to be quite expensive," said Sikorski of Barclays.

Auto fuels are pulled into the cap-and-trade system in 2015. Gasoline prices are sure to rise as distributors are forced to buy carbon permits.

Gas prices rise almost 1 cent per gallon for every dollar of carbon cost. So a $50 carbon price would add 44 cents to a gallon, Point Carbon estimates.

"Californians already pay the highest gasoline price in the country because of their environmental rules, and this is going to drive them higher," said Bill Day of refiner Valero, which eventually will have to buy permits for the greenhouse gases released during refining.

"The refineries at Valero, at least, are about as energy efficient as they can be. There is no carbon scrubber. It doesn't exist," he added.

IT'S THE ECONOMY, STUPID

CALIFORNIA MAY BE THE BLUEST of blue states, but that does not make it immune to the nationwide backlash against public spending. Dan Logue, a Republican state Assemblyman, derides carbon markets as a Ponzi scheme of sorts that will attract investment and loans for questionable clean energy projects.

"The problem with the green economy is when you see green, you see subsidized," said Logue, one of the authors of a rejected November ballot measure to derail the climate law. His prime example of subsidies gone awry is San Francisco Bay area solar panel maker Solyndra, which has received $535 million in federal loans but has shelved expansion plans in the face of competition from China.

It is unclear that California's green dream will change the economics of building the factories of the future. Critics fear companies may simply choose to bolt to less costly states.

California is the U.S. home of startups, fed by Silicon Valley venture capitalists who give a million dollars here, a million dollars there, hoping to defy the odds and find the next Google. For those young companies, a sharp rise in energy prices from the carbon market make it worthwhile to invent something new.

"Oh wow. That's way more than what renewable energy needs to be competitive," said Stephanie Rosenthal, president of southern California's Pyron Solar, at the prospect of double digit rises in energy prices from the carbon market.

"The rise of carbon prices, that's exactly what these new technologies need," she said. "It gets way more interesting for people to invest in these technologies."

(For more environmental news, see our Environment blog at http://blogs.reuters.com/environment)

(Editing by Claudia Parsons and Jim Impoco)

FAST TRACK: Rush hour traffic travels north and south along interstate highway 5 in Carlsbad, California February 8, 2011. **REUTERS/MIKE BLAKE**

COVER PHOTO: A parking structure at the University of San Diego California uses innovative solar trees to collect renewable energy from the Sun February 8, 2011. **REUTERS/MIKE BLAKE**

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