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Overseer's Undercurrent: What's All This Going to Cost?

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One of the big challenges in getting everyone on board the climate change mitigation bus is the great uncertainty attached to the costs of reducing carbon emissions.

When the Kyoto Protocol was seriously being debated for adoption by the U.S. during the Clinton-Gore administration, the discussion pretty much stopped dead when opponents devised a cost figure of $400 million necessary to meet the standard. "And for what?" critics would ask. For reduced economic output, lost jobs, and higher costs for everything reliant on fossil fuels, such as energy, food, transportation, and nearly everything else? It was as if we were going to be throwing money into a hole, then paying somebody to cover it over with cement.

Lost in the argument is the fact that in an economic system such as ours, one person's cost is another person's gain. The real issue is how the money is spent and what kind of investment activity it spurs among the recipients. And in the case of carbon and greenhouse gases, what people will do to avoid paying the costs in the first place.

Economics is filled with great mysteries, like what exactly happened to all the dot.com money? Exactly how much was lost during the savings and loan fiasco of the 1980s? How much is really lost when a $60 billion Enron Corp. collapses into insolvency, or the Dow Jones Index drops 750 points in two weeks? And how much is really gained when the stock market recaptures half of that a week later?

In many cases, the lost value existed only on paper - much like the expected losses attributed to Kyoto. Or rather, like water stored behind a dam, it represented potential energy rather than the kinetic energy of dollars flowing through the economic turbines.

Sure, you drain the reservoir, and that energy may never be generated. But the water had to go someplace - maybe to irrigation, perhaps for industrial consumption or household use, possibly bypassing the turbines to restore river flows and salmon runs. It's more like the water's potential was diverted into another use, one with as much or even more economic or societal value than the ungenerated kilowatt-hours.

Here's another way of looking at the equation: That striving for a post-carbon economy will actually result in economic gains rather than losses.

I am frequently confronted with the question "How much will California's climate change policies cost?"

What if I told you it will result in a net gain of $60 billion? That's one estimate from University of California, Berkeley, energy economists, who say that Governor Schwarzenegger's greenhouse gas reduction program will add $60 billion to the gross state product and create 17,000 jobs. That's not just transferring $60 billion from one pocket to another, but applying the costs of carbon reductions to new technologies and innovations that will, over time, spur even greater economic activity.

You can look at the report that was issued last August in more depth at http://calclimate.berkeley.edu.

Still, there are initial costs to be reckoned with, costs that we as consumers and producers will pay in order to get the new post-carbon economy off the ground. Figuring out what that will amount to is no easy task, especially for non-Ph.D. practitioners like myself.

And the quandary relates to applying a cost to something - carbon emissions - that had never before been quantified. The standard tools are classified as administrative or market-based. For the former you set a price that's politically acceptable and apply a tax or an imputed cost adder. For the latter, what's most often considered for climate change policies is a cap-and-trade system for emissions reduction allowances.

What we're finding is huge variability under either approach. Right now, the most active carbon trading system is in the European Union, and the price of a metric ton of carbon dioxide equivalent delivered on December 1, 2007, is trading for - at last glance - not much more than 1 euro. The range over the past month has been 0.90 to about 1.30 euros.

A year ago, the price was in the 30 to 35 euro/ton range, until the market collapsed last May on news that several countries were oversupplied with reduction credits.

But there's more than one European market price. A ton of CO2 for December 2008 delivery this month sold for prices ranging from 12 to 18 euros.

The European price is interesting, but it doesn't really mean much for us here in California, except as a cautionary reminder that markets are volatile. The closest we have to active GHG market trading is on the Chicago Climate Exchange (www.chicagoclimatex.com), which currently lists several "vintages" of credits for CO2 equivalents at about $3.60/ton.

You might call that the wholesale price.

There are newly emerging retailers of carbon offsets. In a now-famous example, when Schwarzenegger flies to D.C. to espouse post-partisan politics, or drives his Humvees down the coast for fun, he pays the Pacific Forest Trust an amount equal to $10/ton of CO2. The trust directs that money to a working forest, which promises to plant enough trees to absorb and bank an equivalent amount of carbon.

That price appears to be the going rate for a number of other retail-offset purveyors, including TerraPass, which promotes the purchase of carbon credits to mitigate the environmental costs of driving or flying.

But does this represent the actual cost of carbon reductions? That, I think, is still to be determined. Planting trees is one thing, but eliminating the carbon output of a coal plant is something of an entirely different magnitude.

In testimony to Congress this week, John Deutch, a former undersecretary for the U.S. Department of Energy, described conclusions that he and co-author Ernest Moniz reached in a new study, The Future of Coal: Options for a Carbon Constrained World, sponsored by the Massachusetts Institute of Technology. The study promotes carbon sequestration as the most likely technology to be employed if the nation is going to continue to rely on coal-fired power plants for electricity. Deutch told lawmakers this week that the cost of such technology is likely to be about $25/ton for capture and $5/ton for transportation and storage - meaning that a worldwide market price of $30/ton would offset the costs of carbon reduction through sequestration. Whether that price occurs in 2020 or 2050 I'm not sure, but if sequestration is going to be a market reality, it had better be sooner than later.

So there is quite a range of market prices possible. And $3 to $30/ton might be only a part of the spread, once you consider the possibility of administratively set carbon taxes or planning costs that have been discussed at anywhere from as little as $5/ton to as much as $58/ton.

Getting back to California's invoice. We have, as state policy, set a schedule for greenhouse gas reductions that calls for a return to 2000 carbon emissions levels by 2010, a retreat to 1990 levels by 2020, and a further reduction by 80 percent in the year 2050. How much might that cost?

Feel free to check my math here, but according to figures from the California Energy Commission's 1990-2004 greenhouse gas inventory, all sources in the state emitted 460 million tons of CO2 equivalent in 2000, and prior to passage of AB 32, we were projected to reach 520 million tons/year by 2020.

That means to reach the short-term goal, we need to cut carbon by 60 million tons. At $3/ton of Chicago credits, that would be $180 million. But the odds are that once California is actively in the trading market, demand will push prices higher. So let's figure $10/ton - the retail rate - leading to a $600 million/year price tag.

The Deutch/Moniz market model at $30/ton is probably not within this time frame, but if it were, we'd be looking at $1.8 billion/year.

What about the 2020 goal? That involves reductions to the 1990 level of about 420 million tons/year, rather than a projected output of 680 million tons, for a 260 million ton reduction. Take your pick on a price: $780 million, $2.6 billion, or as much as $7.8 billion a per year, as per the MIT market figure.

Cumulative costs? I'm not even going to hazard a guess. That all depends on whether we can find ways to (a) reduce the per-ton costs of carbon reductions and (b) take that money we're spending and invest it in noncarbon energy and transportation.

I certainly welcome suggestions as to how we turn the UC Berkeley projections of net gains into a reality.

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