

‘Cap and Research’ for the Electric Sector

If it continues to gather momentum, the Kerry-Graham-Lieberman (KGL) effort could produce a Senate climate bill that can actually pass this session. Additional changes to its rumored provisions could garner even broader support.

In this note, I will outline a “cap and research” approach to climate regulation for the electric power sector, make the case against a “cap and dividend” approach, and explain why allocating allowances to consumers through their regulated electric utilities will create an effective carbon regulation regime that will be accepted by consumers.

I write from the perspective of a state utility regulator in Colorado, where we are making huge strides on carbon reduction, pursuing a 30% renewable portfolio standard, robust energy efficiency programs, enlightened resource planning, smart grid technology and smart pricing. Under Governor Bill Ritter’s leadership we are moving away from a mostly coal-based electric economy to a “new energy economy” without much (to this point) leadership from the federal government.

Despite our considerable progress, states need federal climate legislation capping carbon emissions. Regulators routinely make 40-year, billion dollar decisions about power plants, transmission lines, fuel sources and customer rate structures. We cannot postpone these decisions; federal leadership is needed now so that we can make and justify these decisions with full information.

Five Components of the Cap and Research Approach

Sector-by-Sector Approach: The KGL bill will reportedly propose a regulatory regime that is specific to the electric sector, an approach I have supported for a couple years. Carbon emissions in other sectors would be regulated in various other ways, e.g., through taxes or performance standards.

Adopting sector-specific rules may arguably sacrifice some of the efficiency promised by a single economy-wide carbon “market.” But there are also clear advantages to the sector-by-sector approach. It is easier to address the distributional equities that are special to each sector; it is easier to harmonize new regulations with existing regulations and with market structures within each sector; and finally, the electric sector can move forward without additional delay because we already know how to reduce emissions using a cap and trade mechanism: witness the success of the Acid Rain program.

A sector-by-sector approach requires that we address the boundaries between the sectors. For example, many expect that the small vehicle fleet will migrate from liquid fuels to EVs and PHEVs, increasing electric demand while reducing carbon emissions overall. To enable this migration, there must be communication between the rules of the electricity sector and those of the liquid fuels sector.

Cap and Trade with Allowances to Consumers through Local Distribution Companies (LDCs): In the Acid Rain program, allowances to emit SO₂ were freely allocated to utilities, traded among those recipients and

then retired for compliance. As the number of allowances was reduced each year, emissions fell. The result was, by any measure, a great success: SO₂ emissions were reduced more quickly and at less cost than anyone predicted.

The same approach will work for carbon regulation. After an initial allocation, fewer allowances would be issued each year, tightening the sector-wide cap on carbon emissions. Assuming that non-compliance is not an option because of the financial penalty, emitters must either purchase an allowance or reduce emissions, possibly by switching fuel or shutting down. There will be no other choices. If an emitter purchases an allowance, it will be available only because another emitter has reduced its emissions.

Allocating free allowances to regulated LDCs will result in the cost of electricity rising gradually as the carbon cap is lowered. Although the allowances would be issued at no cost, they would immediately acquire a value due to their opportunity cost.

The disposition of allowances would be a matter for the utilities and their regulators. With the oversight of regulators, utilities with fossil generation could use the allowances for compliance, sell the allowances to pay for retirement of fossil generation or reduce emissions with energy efficiency investment, among other choices. The exact strategy will differ from utility to utility, depending on its circumstances, growth rate, access to capital, etc. Utilities that buy power in organized market will face similar choices. With no generation of their own, they will sell the allowances to emitters that have a compliance obligation. The funds will be used either to pay for higher market prices, to fund investment in energy efficiency, or to make additional investment in low carbon resources, among other choices.

The competing policy option is to auction the allowances. Under this approach, the cost of electricity rises immediately as emitters raise prices to cover the cost of the allowances they are required to hold. Depending on the disposition of the auction revenues, various outcomes follow. If auction revenues are used to fund dividend checks for taxpayers or to reduce the federal deficit, then electricity prices will have gone up, but the revenues will have “left the system.” The obligation to reduce emissions will remain, requiring additional increases in electricity rates. If auction revenues are spent on energy efficiency or renewable energy, then we are back to the case where allowances were free and regulators raised rates to pay for those EE and RE efforts, as we do today.

I think we should start this national carbon regulatory regime with an allocation of free allowances to consumers through their regulated utilities. Prices for electricity will start near today’s levels and then gradually increase over time as carbon is reduced. This approach is more consumer-friendly and gives businesses and consumers time to adjust, compared to the price jolt produced by auctions. If, in contrast, auction revenues leave the system in the form of rebates, it will be much more difficult, financially and politically, to raise rates further to cover compliance costs. Finally, allocating free allowances based on historic emissions will avoid the differential regional impacts that will invite business and consumer backlash.

Electric Sector Research Funding: Meeting carbon goals for 2020 will be hard, but achievable with today’s technologies. Meeting carbon goals for 2030 and beyond without a technological breakthrough is hard to imagine. We must focus our collective efforts to find those breakthroughs.

In addition to establishing a cap and trading system, the KGL legislation should levy a thin “research tax” on carbon emissions within the electric sector, with the proceeds dedicated initially to research on CCS (carbon capture and storage), renewable energy and energy storage technologies. A levy of \$4 per metric ton on CO₂ emissions would produce around \$10 billion annually, increasing average US electricity prices by less than 3 percent. Not quite a Manhattan project, but a seriously large level of research and demonstration funding. Moneys raised in this fashion must be protected from diversion to other purposes. Funds should be steered to established research organizations such as NREL, LBL, EPRI, to funding channels such as ARPA-E and made available for at-scale CCS demonstrations through DOE. The research tax would show up in auction prices in organized electric markets and be passed through regulated prices in traditionally regulated markets.

This research funding is especially important if the price of allowances is contained by a price collar, a feature rumored to be in the KGL legislation. Relatively low, constrained allowance prices are unlikely to produce the incentives for private firms to fund the research to develop the new technologies needed in the next twenty years. A substantial, national R&D effort is needed to spur innovation in low-carbon generation development.

Reliance on State Utility Regulation. State utility regulation remains a mystery to many involved in the climate debate, leading to a great deal of misunderstanding about how a system of free allowances issued to regulated LDCs would work.

From where I sit as a state regulator, working within a cap and trade regime with free allowances issued to the LDCs would be a familiar exercise. At each point, I retain the obligation to ensure that the utility takes the long-term, least-cost path to serve its customers while complying with all applicable requirements, including RPS obligations, EE requirements, environmental laws and (now) the new federal carbon law. In our resource planning role, state regulators will now be informed by the value (the opportunity cost) of emission allowances as we make decisions about whether to require more energy efficiency, another fossil plant, more wind power or more demand response. In other words, our decisions will now be informed by the market price of carbon. (Notably, this obligation exists whether the allowances are allocated to LDCs or purchased in an auction.)

Free allowances will not produce windfall profits for utilities. Across the nation, LDCs are regulated under a variety of rate making plans, all of which match allowed revenues with costs. To the extent that a utility profits by selling an allowance, regulators will account for that revenue in setting the company’s retail rates. The costs and revenues may flow through an adjustment mechanism or be considered in a general rate case. Either way, state regulators will make the match of revenues and costs, just as we do today. Regulators will have no more reason to allow a windfall profit on carbon emission allowance sales than we do on any other transaction the utility undertakes today. Once again, consider the Acid Rain program. State regulators ensured that the regulated utilities cleaned up SO₂ without padding their bottom line.

Allowances Based on Historic Emissions: We don’t yet know what the allowance allocation formula will be in the KGL bill. The allowances should be based primarily on the utility’s baseline level of emissions, as was done in the Acid Rain program. The Waxman-Markey bill incorporates a compromise allocation

scheme, championed by the Edison Electric Institute (EEI), in which some allowances are given to merchant coal generators. There is simply no principled basis for this allocation, only a political one, and the KGL bill should reject that approach.

The EEI compromise also allocates allowances to LDCs based half on historic carbon emissions and half on electricity sales. Once again, this creates regional biases and a mismatch between the mechanics of the cap and the sources of greenhouse gases. Unless allocations are based on emissions, utilities with a preponderance of hydro, wind or nuclear generation will be issued allowances even though they have no compliance obligations for those generation resources. While this may be a boon to such utilities, it comes at the expense of utilities with higher emissions.

As discussed below, the allocation basis should be designed not to penalize states that have taken early action to reduce carbon in advance of the federal legislation. If utilities know they will not be penalized for early action, they can begin making rational generation choices as soon as the bill is signed into law.

Additional Features that will Strengthen the Kerry-Graham-Lieberman Bill

Here are four additional features that should be added to the Kerry-Graham-Lieberman Bill:

Early Action Protection. Any bill should encourage and fairly treat “early action” taken by states prior to the effective date of the new law. If allowances are allocated based on emissions (as they should be) and if the bill doesn’t deal with the early action issue, some states will be penalized for early action and all states will have the perverse incentive to wait to begin reducing carbon emissions until the bill takes effect. It may be difficult to get this exactly right, but there is an easy “rough justice” solution: when allocating allowances, select a suitable historic base period for measuring emissions across LDCs (but only for purposes of apportioning allowances). This approach first appeared in the Dingell-Boucher bill a couple years ago and is now found in Waxman-Markey.

Less reliance on the price and more on programs. Many analyses have concluded that relying on a carbon price alone will not deliver enough emission reductions unless the carbon price is quite high. It is a mistake to put all our hopes on “a price on carbon,” especially if the legislation also puts a “collar” on the price that allowances may achieve, as the KGL draft is rumored to do. States like Colorado are cutting their carbon intensity with renewable energy requirements and efficiency mandates. The bill should contain inducements for states to pursue energy efficiency and low-carbon generation sources. Then, with a clean energy/energy efficiency mandate in place, states should have flexibility in how they meet these standards and the ability to decide (as we do today) how to set electric rates.

Limits on trading. I have already cited the success of the Acid Rain program. It efficiently and cost-effectively reduced SO₂. The program was also a fairly boring, if efficient, trading market. For lots of reasons, it is important that the carbon allowance trading regime in the electric sector be similarly boring. There are several ways to dampen the trading frenzy that some imagine for the carbon market. One

approach is to limit ownership and trading of allowances to those entities to whom the allowances are issued and those entities with a compliance obligation. Brokers will be needed for liquidity, but they should not be permitted to trade for their own account.

Provision for electric vehicles. Given the likely migration of the small vehicle fleet to electric vehicles (EVs) and plug-in hybrid electric vehicles (PHEVs), a provision will be needed linking the electric sector regulatory regime to the liquid fuel regulatory regime. We should expect electric energy requirement to go up as EVs and PHEVs proliferate. The electric sector must get credit (offsets) for the net reductions in carbon emission attributable to this migration.

The Cap & Dividend Approach Fails to Match Costs and Benefits

Writing checks to constituents might be politically potent, but taking all that money out of the system will hinder progress on carbon reductions in the electric sector. Higher electric rates at the front end of this process will make it harder for utilities and regulators to raise rates even further to achieve compliance with the cap. A per capita dividend is also fundamentally unfair across regions: why should a consumer in Washington or Tennessee who gets subsidized federal hydropower get a rebate, much less the same rebate as a consumer in Indiana or North Dakota who will earn her rebate by paying higher utility rates as carbon attains a price?

The dividend approach also suffers from the fact that commercial and industrial electric customers (from mom and pop businesses, to hospitals, to government, to manufacturers) will fund the dividend with higher electric prices, but will get no dividend. This will create an instant competitive problem for businesses and industries in states with high carbon emissions, since their higher electric rates will fund dividend paid to taxpayers, including those in states with low carbon emissions.

Conclusion

With the Kerry-Graham-Lieberman effort, we may be approaching an inflection point in the debate over climate legislation. It is critical that we get the details right. The “cap and research” approach described in this note is a common-sense approach that will efficiently reduce carbon emissions, be less disruptive to the economy, protect consumers and businesses, and avoid regional disparities.

Ron Binz
Chairman, Colorado Public Utilities Commission
ron.binz@dora.state.co.us
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