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When California first enacted the California Global Warming Solutions Act of 2006 ("AB 32"), the legislation stood out for the concrete steps it proposed toward the development of policies to reduce greenhouse gas (GHG) emissions. The hope that California's first steps in reducing GHG emissions would lead others to action was explicitly written into AB 32's findings and declarations: "[A]ction taken by California to reduce emissions of greenhouse gases will have far-reaching effects by encouraging other states, the federal government, and other countries to act."

While AB 32 was enacted at a time when the prospects for federal climate policy were bleak, the political climate in Washington, D.C., is dramatically different today. The U.S. Environmental Protection Agency ("EPA") recently indicated that it has the authority to regulate CO_2 and other GHG emissions under the Clean Air Act, President Obama has made climate change policy a top priority, and the Waxman-Markey legislation – including a greenhouse gas cap-and-trade system as well as numerous other climate policy elements – has been passed by the House of Representatives.

With federal climate policy now on the horizon, California regulators face important decisions regarding the future of state policies. In this memo, we address some of these key questions precipitated by the evolution of federal climate policy: What are the implications of overlapping state and federal climate policies? Should California retain its cap-and-trade system after a federal system is developed? What are the implications of an impending national cap-and-trade system for the next steps in the development of California's cap-and-trade system?

What are the implications of overlapping state and federal climate policies?

With the development of state and federal climate policy moving in parallel, the potential exists for policies to emerge that impose overlapping regulatory requirements on emission sources, energy users, and other regulated entities in California. Under some

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circumstances, state and/or regional policies can co-exist with Federal policies that address the same or similar problems without leading to undesirable outcomes. For example, in regulating local air pollution in California's many urban and agricultural regions, the presence of regional, state and federal requirements for the same pollutant, while adding complexity, does not create significant problems that limit environmental effectiveness or impose additional costs (for achieving a given environmental benefit). Thus, under these circumstances, policy overlap leads to relatively few problems.

However, in other circumstances, when state and national policies address the same environmental problem, the resulting overlap in regulatory requirements can lead to unintended and problematic consequences. This is true for policies that use conventional approaches as well as market-based approaches (e.g., cap-and-trade systems) or company-wide averages (e.g., federal Corporate Average Fuel Economy (CAFE) standards). Use of these flexible mechanisms can significantly lower the cost of achieving a policy's environmental target. However, problems can emerge when states layer more stringent policies on top of federal policies. A more stringent state policy intended to achieve additional reductions in emissions, in fact, could often achieve few to none. While the state policy reduces emissions within the state, these reductions can be offset by increased emissions outside of state – a phenomenon know as "leakage." In addition to potentially creating few (to no) incremental environmental benefits, such overlapping state policies can actually have adverse economic consequences. If these policies impose costs on businesses in the state that are not faced by businesses in other states, then the state's economy could be adversely affected (to the benefit of other states.) These policies may also increase the overall costs of achieving environmental targets, since the more stringent state policies can force more costly actions in one state, while relaxing requirements in others.

The potential for overlap between federal and state policies – and all of these potential problems – exists for several elements of California's AB 32 policy. Such overlap was recently avoided in one case when the Obama administration pre-empted state vehicle GHG emission standards with increases in the stringency of federal CAFE standards.[1] However, overlap between California's Renewable Portfolio Standard (RPS), Low Carbon Fuel Standard, and cap-and-trade program and emerging federal policies could increase economic costs to the state while providing few environmental benefits. Overlap between various elements of the AB 32 Scoping Plan and a federal cap-and-trade program poses particularly serious economic risks. We turn next to a discussion these risks and their implications for the next steps in the development of California's cap-and-trade system. We then finish by discussing the economic and environmental consequences of pursuing other elements of the AB 32 Scoping Plan in the event a national cap-and-trade system is implemented.

[1] Recent analyses indicate that had California and 13 other states enacted the more stringent proposed GHG vehicle standards (the so-called "Pavley Standards") that the policies would have failed to achieve emission reductions in the short-run and achieved less than 20% of intended reductions due to emissions leakage in other states. Goulder , Lawrence, Mark Jacobsen, and Arthur Benthem, "Impacts of State-Level Limits on Greenhouse Gases per Mile In the Presence of National CAFE Standards," 2009.

Should California retain its cap-and-trade system after a federal system is developed?

The consequences of continuing California's cap-and-trade program after a federal program has been developed depends largely on the details of how these programs would interact with one another. A complete overlap between state and federal cap-and-trade programs, in which California sources have to comply with both state and programs, would achieve no additional environmental benefits while adversely impacting California's economy. Because a federal cap would cover GHG emissions from all domestic sources, including those in California, any additional reductions in GHG emissions achieved by sources in California will simply be offset by increases in GHG emission by sources outside of California. National emissions would not change. What would change is the distribution of costs: sources within California would bear the additional costs of California's more stringent GHG targets, while sources outside of California – which would need to achieve fewer emissions reductions – would incur lower costs to comply with cap-and-trade obligations.

To avoid an overlap between California and federal programs, California could be "carved out" from a federal program. Under this scenario, sources outside of California would be covered by the federal program, while sources within California would be covered only by the state program. With this modification, California could achieve incremental emission reductions by lowering GHG emission targets on sources within California. However, achieving these additional emission reductions will impose additional costs on California businesses that will not be faced by competitors outside of California. This imbalance in costs could lead to disproportionate impacts on California's economy relative to other parts of the country as a result of the federal policy. Further, the imbalance in the stringency of the cap-and-trade system between California and the rest of the nation would reduce the policy's cost effectiveness, since sources in California would be undertaking more costly emission reductions than sources in other parts of the country. These economic imbalances could be addressed by allowing sources within California and the rest of the country to trade GHG emission allowances (i.e., linking the two systems), but this would introduce unnecessary transaction costs.

Exempting California sources from a federal policy – whether the California and federal programs are linked or not – would set an example that other regions, such as the RGGI states, might also seek. This could potentially lead to the fragmentation of domestic U.S. climate policy, which would have undesirable environmental and economic consequences by establishing new obstacles to political consensus on U.S. climate policy and promoting non-uniformity of climate policy across regions.

Pre-emption of California's cap-and-trade system once a federal system has become effective would avoid these various shortcomings. A national cap-and-trade system would provide the most cost-effective and administratively simple framework in which domestic GHG emission reductions could be achieved. It would also reduce economic leakage by harmonizing the regulations faced by industries in different regions of the country. The simplicity and uniformity of such a system would also facilitate

linkage with GHG trading systems in other countries, which might further reduce the cost of achieving GHG emission targets.

Federal legislative proposals vary in the degree to which they follow this guidance. For example, the latest markup of the Waxman-Markey Bill prohibits states from implementing their own GHG cap-and-trade system during the federal system's first five years, but also appears to give states the ability to increase the cap's stringency by requiring that in-state sources surrender additional federal GHG allowances beyond those required for federal compliance.[2] Depending on how this power is used, it could decrease the cost-effectiveness of a national program by imposing additional GHG allowance burdens on California sources and impose significant burdens on particular sources if coupled with more stringent state GHG requirements. While California regulators are aware that including California in a broader cap-and-trade system can "achieve greater environmental and economic benefits for California,"[3] they also indicate a desire to retain the ability to pursue state programs to achieve incremental reductions.[4]

What are the implications of an impending national cap-and-trade system for the next steps in the development of California's cap-and-trade system?

Assuming – consistent with sound policy and current legislative direction – that a federal policy would pre-empt all state cap-and-trade programs, California must determine how best to proceed with near-term development of its own cap-and-trade system given that a federal program may come into force on or soon after 2012, the first year California plans to begin its system. With a federal policy on the horizon, a cap-and-trade system limited to California sources would seem to offer few environmental benefits. As a result of emissions leakage, in which emissions reductions in California are offset by increases in emissions outside of California, a cap-and-trade system limited to California may achieve few net reductions of GHG emissions. For example, emissions leakage from contract reshuffling alone could allow the electricity sector to lower its emissions to 1990 levels "on paper", while achieving no actual emission reductions.[5]

While achieving few environmental benefits, a California GHG cap-and-trade system could impose significant economic costs on California's economy if GHG

[2] For example, see Sec. 334 States, H.R. 2454.

[3] CARB, *Climate Change Scoping Plan*, December 2008, p. 30.

[4] For example, a memorandum from the State of California on federal climate policy supports "the use of federal allowance currency for purposes of state programs." State of California, February 25, 2009.

[5] Bushnell, James, Carla Peterman, and Catherine Wolfram, "California's Greenhouse Gas Policies: Local Solutions to a Global Problem?" Center for the Study of Energy Markets, Working Paper 166, April 2007. Regarding the limitations of regulations to address this type of leakage, *see,* Wolak, Frank, James Bushnell, and Benjamin Hobbs, Opinion on "Load-Based and Source-Based Trading of Carbon Dioxide in California", Market Surveillance Committee of the California ISO, November 27, 2007.

allowance costs are large enough to shift economic activity from California to other states (or countries) that do not face these costs. Assuming that these costs would be imposed for only an interim period before a federal system comes into force, California regulators might question whether these costs are worth the limited environmental benefits, particularly given the risk that some of the economic consequences may be *difficult to reverse* once a federal policy is in place and the differential in carbon costs between California and other states has been removed.

Implementation of a cap-and-trade system for California would also require a subsequent transition to a federal system, which could impose unnecessary operational complications and market risks on the initial periods of a federal system. Policies regulating the transfer of allowances from a state system to a federal system risk creating perverse incentives if not properly designed. In fact, provisions in the most recent Waxman-Markey bill would encourage speculation in state allowance markets that could unintentionally elevate market prices for these allowances.[6]

What are the implications of a federal cap-and-trade system for other elements of the AB 32 Scoping Plan?

While federal climate legislation may preclude California from implementing its own cap-and-trade system, California could be given discretion to implement other elements of its AB 32 Scoping Plan under federal legislation.[7] If California regulators are given this authority, they should carefully scrutinize the value provided by any state climate policies they seek to retain after implementation of the national cap-and-trade system. Just as overlap between state and federal cap-and-trade systems would lead to few (or no) incremental environmental benefits from a more aggressive state system, while imposing additional costs, the same can be said of other types of state policies, such as conventional standards, that target sources already covered by a national (or state) cap-and-trade system. If the standards are not binding, then they are irrelevant; but if they are binding, within the umbrella of a state or national cap-and-trade system, then their major effect will be to drive up costs of compliance, but without any incremental environmental benefits.

[6] The current markup of the Waxman-Markey Bill would allow holders of state allowances to trade those allowances for federal allowances based not on the quantity of state allowances held (i.e., a swap of one state allowance for one federal allowance) but rather on the average price paid for state allowances (i.e., a swap of $100 worth of state allowances for $100 worth of federal allowances). This mechanism would provide an incentive for sources in California to bid up the price of state allowances in the initial phase of California's program to reap greater benefits from future allowance swaps once a federal program is in place.

[7] For example, while the proposed Waxman-Markey legislation would prohibit states from implementing a cap-and-trade system from 2012 to 2017, it would allow states to implement other GHG policies. Sec. 334. States, H.R. 2454.

For example, implementation of California's 33% RPS would not achieve any additional GHG emission reductions, because any emission reductions achieved in California would be offset by increased emissions from other sources under the national cap (either inside or outside of California).[8] By contrast, state policies targeting sources (or sinks) outside the national cap, such as agriculture and forestry, could potentially achieve lower GHG emission (or sequester additional carbon).

Along with being ineffective at increasing the stringency of state or national climate policy, state GHG policies that overlap with a national GHG cap can raise the costs of achieving GHG targets by reducing the flexibility offered by the national cap-and-trade system to determine *when, where and how* emissions reductions can be achieved. This flexibility ordinarily allows sources subject to the cap to choose the least costly options for achieving GHG targets. State GHG policies can reduce this flexibility by forcing sources to take certain actions to reduce GHG emissions, despite the fact that less costly alternatives may be available in other sectors or other regions of the U.S.

While many state GHG policies would raise costs, certain state GHG policies could lower the cost of achieving GHG reductions if they identify and succeed in eliminating *market failures* preventing implementation of cost-effective GHG reduction opportunities.[9] Such policies might complement a cap-and-trade system if they can address potential market failures in a manner that leads to cost-effective emission reductions, while not introducing new policy costs or market distortions. However, up until this time, CARB's economic analyses of its proposed regulations has failed to take this approach when identifying which policies to include in its AB 32 Scoping Plan and how such policies should be designed. Instead, in the words of one of the peer reviewers of CARB's economic analysis, the analysis "gives the appearance of justifying the chosen package of regulatory measures rather than evaluating it or looking at policy options."[10] The emergence of a national cap-and-trade system places a greater onus on CARB to ensure that its state GHG policies complement a federal cap-and-trade system, rather than simply

[8] The proposed Waxman-Markey legislation appears to give state regulators the authority to impose additional requirements regarding federal allowances on sources subject to state regulations. *See* Sec. 334. States. H.R. 2454. Some suggest that such authority provides a mechanism to allow states to achieve incremental GHG emission reductions from state regulations. For example, such authority could be used to impose additional allowance requirements on sources targeted by state GHG policies to ensure that these policies achieve incremental reductions. However, this proposal would, in effect, penalize targeted sources twice – once for complying with the more stringent regulation and a second time for offsetting the increase in emissions under the national cap.

[9] For a discussion of the implications of market failures for the design of cost-effective climate policies, *see,* Stavins, Robert F., Judson Jaffe, and Todd Schatzki, "*Too Good to Be True? An Examination of Three Economic Assessments of California Climate Policy*, AEI-Brookings Joint Center for Regulatory Studies, Related Publication 07-01, January 2007.

[10] Peace, Janet and Liwayway Adkins, Pew Center on Global Climate Change, Letter regarding Review of Economic Modeling Analysis, Peer Review of the Economic Supplement to the AB 32 Draft Scoping Plan, November 2008.

imposing additional costs on California's economy for little environmental benefit. Because a national cap-and-trade system will reduce emissions leakage and lower the cost of achieving GHG targets relative to a cap-and-trade system limited to California, the net impact of these state policies will be even less favorable when implemented under a national cap-and-trade system.

Conclusion

The limited geographic scope of a cap-and-trade system for California sources makes it vastly inferior to a federal system on both economic and environmental grounds. For this reason, California regulators recognize the need for a nationwide cap-and-trade system, accompanied by commitments for other countries, to achieving meaningful reductions in GHG emissions. They should also consider whether the development of a federal cap-and-trade system should signal the end of their own. A federal system – absent the complications of overlapping state systems – represents the most cost-effective, environmentally effective, and simplest approach to achieving economy-wide reductions in GHG emissions. The simplicity and uniformity of such a system also encourages the long-run development of effective global institutions for managing GHG emissions.

The implications of the development of federal climate policy for other elements of the AB 32 Scoping Plan are equally significant. While CARB appears to be working hard to maintain its authority to implement state climate policies other than its cap-and-trade system, it should subject these programs to significant scrutiny to be sure they will provide Californian's with value given the additional costs and lack of incremental emission reductions such policies would Provide.

Having helped spur movement on a federal cap-and-trade system, California regulators might consider simply declaring victory and focusing on potential contributions they can make to the development of effective national and global institutions for addressing climate change.