

Intertemporal Regulatory Tasks and Responsibilities for Greenhouse Gas Reductions

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Abstract

A number of jurisdictions are in the process of establishing regulatory systems to control greenhouse gas emissions that will include as a major component a cap-and-trade system. Both short-term and long-term emissions reduction goals are often established, as California does for the years 2020 and 2050, but little attention has yet been focused on establishing annual emissions targets for the intervening years. We develop recommendations for how these annual targets—which we collectively term a “compliance pathway”—can be set, as well as what flexibility sources should have to adjust to changing or unexpected circumstances in light of cost uncertainties. Existing cap-and-trade programs provide limited guidance on the choice of compliance pathways or on mechanisms for flexibility along them. We consider environmental effectiveness, efficiency, equity, and adaptability as appropriate criteria by which these intertemporal policy alternatives should be judged. We also consider how the strategic context of global emissions reduction may affect the design. Borrowing constraints that are likely to be present in any regulatory system affect our recommendations. We recommend that some allowances intended for future years be auctioned early, and that sources be allowed to use them early. We also find that a three-year compliance period can have substantial benefit over a one-year period. Furthermore, we find that many sources of cost uncertainty suggest a compliance pathway characterized by increasing emission decrements along it. This can be approximated by discrete linear segments, and the latter may fit better with ongoing global negotiations.