RESOURCES FOR THE FUTURE

POLICY BRIEF

MAY 2016 | NO. 16-05

The Fertile Middle Ground for California's Climate Policy

Dallas Burtraw*

Key Points

- Companion policies to carbon pricing are imperative to achieve California's emissions reduction goals.
- Carbon prices have value for introducing incentives, but are likely to remain below their efficient level indefinitely, in part because the leakage of economic activity out of the state grows with the difference in carbon prices across jurisdictions.
- Infrastructure policies such as the renewable portfolio standard and low carbon fuel standard, as well as land use policies such as SB 375 target long-run decisionmaking that is not sufficiently responsive to modest carbon prices.
- Each of these policies viewed in isolation is imperfect. In tandem, and reinforced by climate pricing, the state's infrastructure policies alter the investment climate in the western United States.
- Everywhere, economic incentives must be infused in companion regulations, in carbon pricing and throughout the economy.

Because greenhouse gas emissions are ubiquitous, can global climate change be solved with a single policy? Many of the architects of California's approach to mitigating climate change do not think so. Instead, California's policy approach applies a variety of tools both to reduce emissions in the short run and to promote innovation and infrastructure for the long run. To succeed, the policy must capitalize on the state's economic and technical leadership,

*Dallas Burtraw, Darius Gaskins Senior Fellow, Resources for the Future; burtraw@rff.org. Dallas Burtraw was a member of California's Market Advisory Committee in 2006 that outlined the design of a cap-and-trade program, and he was a member of California's Economic and Allocation Advisory Committee in 2010 that evaluated options for initially distributing emissions allowances in the trading program. Currently he is part of the AHEAD project comparing energy and climate policy in Germany and California, funded in part by ClimateWorks. Resources for the Future, based in Washington, DC, is a 64-year-old independent, nonprofit, nonpartisan policy research institute that specializes in environmental and natural resource economics.

while protecting communities that may be most vulnerable both to the economic impacts of climate change and to the policy measures intended to address it.

Carbon pricing is essential to spark innovation and identify efficient ways to reduce emissions. Nonetheless, carbon prices are likely to remain below their efficient level indefinitely. To achieve its climate goals, California's strategy involves numerous standards and measures as companions to an economy-wide cap-and-trade program. Some of these measures affect the same emissions category, targeting different aspects of its operation. Such companion policies to carbon pricing as described below are imperative to achieving emissions reduction goals.

- *Renewables*: Conventional thinking in the electricity sector has moved from the view (dated 15 years ago) that the overnight cost of renewables might make even a 5 percent penetration difficult, to the current worry about how to integrate 50 percent or more penetration—a nice problem to have. The coordination problem associated with system operation could not be seriously imagined or addressed until substantial penetration of renewables became evident.
    - The Renewable Portfolio Standard (RPS) made the role for renewables evident and revolutionized the future of the electricity system in California and throughout the west.
- *Transportation*: Vehicle performance is affected by emissions standards and vehicle operation is affected by a carbon price on transportation fuels. However, the behavioral response to a carbon price signal in transportation is limited, as households and businesses operate in already built environments with existing capital and technological options.
- *Fuels*: Neither emissions standards nor a moderate carbon price affects the life cycle impacts of transportation fuels or appears sufficient to justify substantial investment in new technology and new infrastructure.
    - The Low Carbon Fuel Standard (LCFS) addresses the long-run challenge of innovation and infrastructure coordination.
    - The LCFS provides an economic justification for research and deployment of electric vehicles and alternative liquid fuels.
    - Low carbon transportation methods require new infrastructure that must be in place before consumers can reliably change their transportation habits. A modest carbon price is not sufficient for such investment; the LCFS ensures this outcome.
- *Planning*: Electricity and transportation overlap in the long-run through electrification of the transportation sector and through land use planning and building standards to reduce transportation and electricity energy needs.
    - The provisions of SB 375 give incentives for local governments to incorporate greenhouse gas impacts in their long-run planning activities.

A primary design goal is to impart as much flexibility to decision makers as possible to enable creative measures to reduce emissions. Carbon pricing contributes importantly to this goal. But it is also important to make sure the response is not just short run in nature. **Companion policies target activities and stages in the long-run decisionmaking process that may not be responsive to modest carbon prices.** This is especially necessary and evident in sectors where there is substantial long-lived infrastructure requiring coordination and planning that is not triggered by a modest carbon price.

- Carbon prices are likely to remain below their efficient level. There are several reasons for this:
    - If cap and trade works as intended it provides an incentive to find near-term, low-cost opportunities for emissions reductions that pushes down the demand for allowances and their price.
    - Partial coverage across jurisdictions invites leakage of emissions and economic activity to outside a jurisdiction that introduces carbon pricing. This reduces the effectiveness of the policy, raises the cost of emissions reductions and undermines the political viability of carbon pricing.
    - The leakage problem grows with the difference in carbon prices across jurisdictions; consequently one jurisdiction cannot set high carbon prices unilaterally. Other companion policy approaches are necessary to achieve climate goals.
    - Perhaps knowingly, the public consistently expresses a preference for regulatory approaches over emissions pricing. Partly this stems from an intuition of competitiveness of the state's economy. Partly this stems from mistrust of the government revenue function coupled with mistrust of markets with respect to managing atmosphere resources.
- Globally the influence of carbon pricing has so far fallen short of expectations. California's cap-and-trade program is arguably the most well designed program in the world and serves as a template for other new programs. The influence of carbon pricing is growing, but it is slower than is necessary to solve the climate crisis.
- All existing carbon pricing programs, including California, provide a carbon price that is well below the US government's social cost of carbon or the price that most economists think is necessary to spark a transformation of the economy.

Policies about New Infrastructure

Policies related to infrastructure development, such as creating a network of electric vehicle charging stations, provide signals that promote innovation and initiate and guide investments. These signals reinforce and amplify the signal given by the carbon price, as is necessary because of persistent underpricing of climate change externalities. For example:

- A modest carbon price may affect day-to-day decisions but is probably not sufficient to trigger systematic innovation. Infrastructure policies intend to provide a signal for a comprehensive transformation to a low-carbon economy.
- Operating with only a modest carbon price, legacy infrastructure has an advantage relative to innovative technologies that require investment in new forms of physical and social infrastructure. Infrastructure policies level the playing field among technologies.
- Each of these policies viewed in isolation is imperfect. Carbon-intensive electricity or transportation fuels might be diverted ("laundered") to other jurisdictions while cleaner products are directed to California to satisfy the state's climate goals. **Nonetheless, in tandem and reinforced by climate pricing, the state's infrastructure-level policies alter the investment environment in the western United States.** Funding for high-carbon products is more expensive because those investments become more risky, and funding for innovative technologies becomes less expensive because of infrastructure-level policies.

Infrastructure policies coupled with other narrowly prescribed measures and standards aimed at the performance of specific technologies help shape the physical performance of the economy. As companions to carbon pricing these policies also help make climate policy goals more salient to firms and individuals in general. Together, prices and regulatory measures impose incentives and responsibilities throughout the decision-making process and create new norms within businesses and households to search for ways to reduce carbon emissions, in the short run and in the long run. Moreover, they provide a signal of stability against potential fickle policy reversals.

A Mix of Companion Policies Address California's Climate Challenge

Although regulatory standards and measures are important and may account for most of the observed emissions reductions, carbon pricing remains imperative. Even if carbon pricing cannot be relied on as a singularly effective policy to reduce emissions, **economic incentives must be infused in regulations and throughout the economy**. In the short run carbon pricing is expected to identify the most cost effective emissions reductions and to allocate resources in society. Pricing also provides a way to coordinate across regulations and with programs in other jurisdictions and it affects the expectations of everyone in the economy. As carbon pricing expands across jurisdictions, and therefore can more closely reflect the social cost of carbon emissions, it will provide the incentive for risk taking in the private sector, which is the necessary ingredient to address climate change in the long run. In summary, carbon pricing and companion standards and measures are both required to address California's climate challenge.