Abstract

EPA regulation of CO₂ emissions from existing fossil fuel power plants is imminent. Due to the heavy carbon-intensity of coal as a fuel, the coal industry and entities that rely heavily on coal for electricity appear likely to bear much of the regulatory burden. In response, regulatory features aimed at mitigating some of the adverse impacts on coal and its constituents have been discussed, either in the interest of equity or as a means of easing political and legal opposition. This paper examines one such approach: differentiation in the context of tradable performance standards, where the standard is relaxed for coal generation and tightened for natural gas generation. I explore the economic incentives induced by such a policy, and evaluate three key distributional outcomes: aggregate coal usage, coal plant profits, and regional wholesale electricity prices. To conduct the analysis, I construct and implement a detailed simulation model of the U.S. wholesale electricity market. A key contribution comes from the use of analytic techniques to explain the results of the simulations. For example, I demonstrate how, when the standards are differentiated, coal usage will increase, and how electricity price and coal profit outcomes depend on regional and aggregate features of the electricity market. In the simulation results, I find that differentiation increases coal usage modestly, restores coal plant profits beyond the no regulation level, and increases electricity prices in almost every region of the country. The results imply that differentiation provides limited assistance to coal producers and laborers, and benefits coal plant owners at the expense of electricity generators and consumers.