The U.S. Manufacturing Sector’s Response to Higher Electricity Prices Evidence from State-Level Renewable Portfolio Standards

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While several papers examine the effects of renewable portfolio standards (RPS) on electricity prices, they mainly rely on state-level data and there has been little research on how RPS policies affect manufacturing activity via their effect on electricity prices. Using plant-level data for the entire U.S. manufacturing sector and all electric utilities from 1992 – 2015, we jointly estimate the effect of RPS adoption and stringency on plant-level electricity prices and production decisions. To ensure that our results are not sensitive to possible pre-existing differences across manufacturing plants in RPS and non-RPS states, we implement coarsened exact covariate matching. Our results suggest that electricity prices for plants in RPS states averaged about 2% higher than in non-RPS states, notably lower than prior estimates based on state-level data. In response to these higher electricity prices, we estimate that plant electricity usage declined by 1.2% for all plants and 1.8% for energy-intensive plants, broadly consistent with published estimates of the elasticity of electricity demand for industrial users. We find smaller declines in output, employment, and hours worked (relative to the decline in electricity use). Finally, several key RPS policy design features that vary substantially from state-to-state produce heterogeneous effects on plant-level electricity prices.