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On the Reporting of Water Use and the Effects of Water Use in Hydraulic Fracturing on Local Groundwater Levels in Texas

Hydraulic fracturing activity has increased rapidly in the U.S. over the last decade. During this time, operators have learned to complete wells that are more productive by increasing the amount of water, among other things, used in well stimulations. Since many unconventional oil and gas plays are located in relatively arid regions, this has created concerns over local water availability. However, water management in these areas is complicated, partly due to state laws that largely allow unrestricted groundwater pumping by landowners, but also because the reporting of water use by the industry is not particularly transparent. In this paper, I study two interrelated issues on water use in hydraulic fracturing. First, using a proprietary data set of well-level completion reports in Texas, I show how operators' propensity to report detailed information on water use varies depending on whether the well is located within a groundwater conservation district. Second, I show a causal link between water use in hydraulic fracturing and declining local groundwater levels. My primary policy recommendations include expanding FracFocus reporting requirements to include total water use per well by source and type, and incentivizing the use of online water sourcing methods, which enable formal accounting for water transactions.

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