



A NOTE ON THE IMPACTS OF PROPOSITION 112

BY PETER MANILOFF¹
OCTOBER 2018

Colorado Proposition 112 proposes to prohibit oil and gas drilling within 2500 feet of homes, schools, or other “occupied structures” or “vulnerable areas”. Proponents of the proposition note scientific evidence that living within 2500 feet of an oil or gas well may have adverse health effects.² Opponents argue that the Proposition would place large swaths of Colorado off-limits to further oil and gas drilling, which would reduce employment as well as state tax revenues.

A recent report from the Colorado Oil and Gas Conservation Commission (COGCC) shows that approximately 15% of non-federal land in Colorado would be available for oil drilling under Prop 112.³ However, with the recent advent of horizontal drilling, some subsurface resources beneath the 2500’ buffer may be reachable from within the 15% available surface area.

In this analysis, I calculate what area of the subsurface is within one mile of a surface location which would remain accessible under Prop 112.⁴ That is, how much of the subsurface would be available, assuming that firms could drill horizontally for one mile from any accessible surface location. Figure 1 shows a map of areas within 1 mile of an accessible surface location. I find that 42% of the non-federal subsurface would be accessible, or nearly three times the available surface area. Figure 1 shows the accessible areas in green. A visualization provided by terraPulse provides detailed maps of the non-accessible non-federal surface area and the accessible non-federal subsurface (www.terrapulse.com/terraView/mines).

¹ Assistant Professor, Division of Economics and Business, Colorado School of Mines

² McKenzie, Lisa M., et al. "Human health risk assessment of air emissions from development of unconventional natural gas resources." *Science of the Total Environment* 424 (2012): 79-87, <https://www.ncbi.nlm.nih.gov/pubmed/22444058>

³ Colorado Ballot Initiative #97 2500’ Setback Requirement for Oil and Gas Development, COGCC, July 2, 2018. http://cogcc.state.co.us/documents/library/Technical/Miscellaneous/COGCC_2018_Init_97_GIS_Assessment_2018_0702.pdf

⁴ GIS files for this analysis are at https://petermaniloff.files.wordpress.com/2018/09/prop_112_analysis_website.zip.

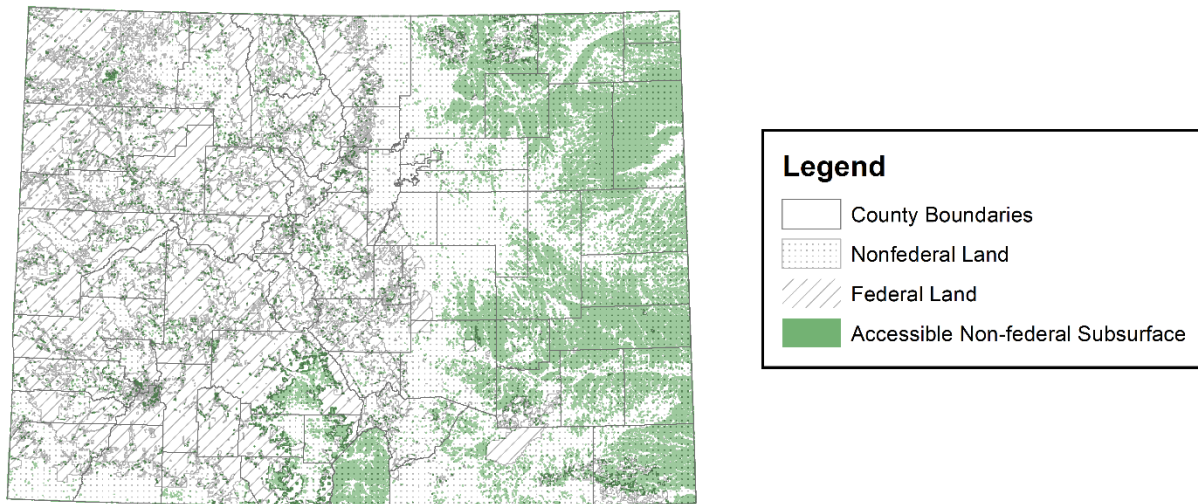


Figure 1: Map of subsurface areas within 1 mile of accessible surface (accessible subsurface in green)

An important caveat is that restricting oil and gas operations to a small portion of the surface would impose substantial operational difficulties. These include constraints on reservoir engineering (the ability to place wellbores to maximize production), as well as potentially requiring additional surface infrastructure such as new roads and utilities (if wells are effectively required to be far from utilities). Furthermore, this analysis does not consider the varying quality of resources – in particular, the sweet spot of the Denver-Julesberg basin largely coincides with the densely populated areas which would be generally inaccessible under Prop 112.

METHODS AND DATA

Analyses were performed in ArcMap software version 10.5, starting with COGCC’s GIS files used in their analysis mentioned in footnote 3.⁵ The accessible surface area was calculated using the “Erase” tool with the COGCC’s Occupied Structure and Vulnerable Areas 2500 ft buffer. Federal lands maps are available in the COGCC zip file, from BLM data, and non-federal land is derived from using the federal lands map and the ArcMap “Erase” command on all of Colorado. I then intersected accessible surface area with non-federal lands. I then calculated a buffer around this accessible surface area with distances of 2500 feet and 1 mile. County borders are available from CDPHE. Address points were not available for Baca, Cheyenne, Crowley, Jackson, Kiowa, Morgan, Phillips, Prowers, Otero, Washington, and Yuma counties and thus those counties use only vulnerable area setbacks (as in COGCC’s analysis).

⁵ Available at http://cogcc.state.co.us/documents/data/downloads/gis/2018_Init_97_2500ft_Buffer_Zones.zip



ABOUT THE AUTHOR

Peter Maniloff is an assistant professor of economics at Colorado School of Mines studying energy and environmental policy and a Faculty Fellow at the Payne Institute. His two major research areas include studying how public policy can ensure that residents of oil and gas endowed regions benefit from oil and gas production, and designing effective climate change policies at a state and local level. Maniloff has a PhD and MA in environmental science and management, and a BA in physics and computer science.

ABOUT THE PAYNE INSTITUTE

The mission of the Payne Institute at Colorado School of Mines is to provide world-class scientific insights, helping to inform and shape public policy on earth resources, energy, and the environment. The Institute was established with an endowment from Jim and Arlene Payne, and seeks to link the strong scientific and engineering research and expertise at Mines with issues related to public policy and national security.

The Payne Institute Commentary Series offers independent insights and research on a wide range of topics related to energy, natural resources, and environmental policy. The series accommodates three categories, namely: Viewpoints, Essays, and Working Papers.

For more information, visit PayneInstitute.MINES.edu.



@payneinstitute

DISCLAIMER: The opinions, beliefs, and viewpoints expressed in this article are those of the author and do not necessarily reflect the opinions, beliefs, viewpoints, or official policies of the Payne Institute or Colorado School of Mines.