Alexander C. Gebben

Golden, CO December 2024

2023 –Present

May 2021

EDUCATION

Colorado School of Mines

Ph.D. in Mineral and Energy EconomicsM.S. in Mineral and Energy EconomicsB.S. in Petroleum EngineeringMinor: Economics and Business

May 2015

UNIVERSITY OF WYOMING, CENTER FOR BUSINESS AND ECONOMIC ANALYSIS

Energy Economist

• Lead nuclear energy supply chain researcher for Center for Energy Regulation and Policy Analysis paper series

Colorado School of Mines

Research Assistant: USDA Grant	2019 - 2022
• Studied collective action of groundwater management in Colorado	
Research Assistant: Critical Materials Institute	2018
• Modeled the availability of critical materials from unconventional sources	

PUBLICATIONS

ECONOMIC REPORTS

- Gebben, Alexander and Daniel Cooley. Wyoming's Nuclear Supply Chain Opportunities: Electricity Generation. [Preprint] 6. Laramie, Wyoming: University of Wyoming: Center for Energy Regulation & Policy Analysis, Feb. 2025.
- Gebben, Alexander and Daniel Cooley. Wyoming's Nuclear Supply Chain Opportunities: Spent Fuel. economic study 5. Laramie, Wyoming: University of Wyoming: Center for Energy Regulation & Policy Analysis, 2025, p. 111.
- Gebben, Alexander. Wyoming's Nuclear Supply Chain Opportunities and Challenges: Heat Applications. economic study 4. Laramie, Wyoming: University of Wyoming: Center for Energy Regulation & Policy Analysis, Dec. 2024.
- Gebben, Alexander. Wyoming's Nuclear Supply Chain Opportunities and Challenges: Uranium Recovery. economic study 3. Laramie, Wyoming: University of Wyoming: Center for Energy Regulation & Policy Analysis, July 2024.
- Gebben, Alexander and Michael Peck. Wyoming's Nuclear Supply Chain Opportunities and Challenges: Component Manufacturing. economic study 2. University of Wyoming: The Center for Energy Regulation and Policy Analysis, May 2024.

Gebben, Alexander and Michael Peck. Wyoming's Nuclear Supply Chain Opportunities and Challenges: Uranium Enrichment. economic study 1. Laramie, Wyoming: University of Wyoming: Center for Energy Regulation & Policy Analysis, Nov. 2023.

JOURNAL ARTICLES

Loos, Jonathon R., Krister Andersson, Shauna Bulger, Kelsey C. Cody, Michael Cox, Alexander Gebben, and Steven M. Smith. "Individual to Collective Adaptation through Incremental Change in Colorado Groundwater Governance". In: *Frontiers in Environmental Science* 10 (2022). ISSN: 2296-665X.

THESIS

Collective Action to Manage Agricultural Groundwater: Drivers and Outcomes

Abstract

Groundwater in the United States has historically been treated as open access, but users are increasingly experimenting with institutional changes to address declining water tables. One such attempt occurred in 2005 when farmers in the San Luis Valley, Colorado, self-organized into a water management subdistrict. This first and largest subdistrict imposed a groundwater usage fee. This was an attempt to reduce aquifer strain and alleviate state legal pressure to address hydrologically connected surface flows.

This paper explores how institutional changes and water conservation affect farmer welfare. We conduct a hedonic analysis to estimate the effects that the self-organization has had on the expected NPV of farmland compared to nearby farms yet to enact their own subdistrict rules. The hedonic model indicates that the NPV of farmland within the subdistrict fell sharply during a period of legal uncertainty and drought, but this loss in value was substantially mitigated by the subdistrict formation. Second, we utilize microdata from the USDA census to decompose the net effect and consider how revenues and costs changed in response to the subdistrict formation. Overall, revenues declined but costs declined more, indicating an ability to adjust complementary inputs along with water use.

Policy Interactions of Water Conservation Programs. Is Efficiency Always Efficient?

Abstract

Previous studies of groundwater management through payment for ecosystem services (PES) have focused on the isolated effects of the programs. We evaluate the interaction of existing groundwater management programs with PES using difference-in-difference methods, finding that existing conservation efforts can mitigate PES conservation. We focus on the application of federal fallowing incentives of the Conservation Reserve Enhancement Program (CREP) for farmers in San Luis Valley, Colorado.

Farmers in this environmentally sensitive region had previously imposed a pumping fees to curb groundwater extraction. This pumping fee is effective at reducing groundwater consumption but has a second-order effect of dampening the conservation of CREP. Farmers with the largest response to the subdistrict policies self-select into the CREP program. Consequently, each well enrolled in CREP conserves 62% less water than would be expected without a pumping fee. Overall, the pumping fees reduce the conservation outcomes of CREP by 32%. However, CREP is effective at compensating the farmers who are the most affected by drought and the program is found to encourage spillover effects, where neighboring wells cooperatively reduce water usage by 2.8 acre-feet per year. The findings provide evidence that the interaction of policy, regional attributes, and community create complexities for PES design.

Bitcoin Mining: The Next Shale Boom?

Abstract

Bitcoin mining is a growing industry which consumes a energy to produce ledger blocks which assign the miner bitcoin. The oil and gas industry often has excess volumes of natural gas which is wasted during the flaring process. This paper will investigate the economics of oil extraction when bitcoin miners pay for flared natural gas.

The volume of natural gas lost to flaring is modeled with a state and basin fixed effect model. A structural vector auto regression model is applied to determine the supply elasticity of oil drilling, using discounted total value of oil and gas sold. When the flared gas is used for bitcoin mining an equivalent subsidy is provided to the oil producer. The elasticity estimate implies that oil producer revenues will increase by 1.36% if bitcoin mining is incorporated into U.S. oil production. This would increasing total U.S. oil production by 0.55%. The response of bitcoin miners to this incentive is found to be robust to bitcoin price declines with a nonlinear autoregressive distributed lag model.

TEACHING

• Instructor University of Wyoming Computational Economics (ECON 5530)	Fall 2023
Teaching Assistant at Colorado School of Mines Mathematical Economics (EBGN 509)	Fall 2020 & 2021
• Teaching Assistant at Colorado School of Mines Principles of Economics (EBGN 201)	Fall 2017 & 2022
GRADUATE SUPERVISION	
Jacob Kirby, Economics M.S Commitee University of	f Wyoming (exp. 2026)
Awards	
William Jesse Coulter Award in Mineral and Energy Economics	2024-2025
Presentations	
South Lincoln County Economic Development Committee Montly Meeting Lincoln County: Nuclear Economic Opportunites and Challenges	Kemmerer, WY February 21, 2025
7 th Nuclear Innovation Bootcamp Energy Markets: Global and National	Laramie, WY July 23, 2024
99^{th} Annual Western Economic Association International Conference Should We Always Aim for Higher Quality? Restoration Framework of In-Situ Uranium Minir	Seatle, WA July 2^{nd} , 2024
11^{th} Annual Front Range Energy and Economics Camp Bitcoin Mining the Next Shale Boom?	Boulder, CO May 13, 2022
23^{rd} Annual CU Environmental and Resource Economics Workshop Responding to a Groundwater Crisis: The Effects of Self-imposed Economic Incentives	Vail, CO October 1, 2021
Arkansas Basin Roundtable Water Management Case Study and Proposal	Pueblo, CO March 11, 2020

INDUSTRY EXPERIENCE

EnergyIQ (Now Quorum Software)	Littleton, CO
Data Analyst	2015 - 2017
• Supported Davon Energy Lando Oil Narry, and Pritich Patroloum in data pools	

• Supported Devon Energy, Laredo Oil, Nexus, and British Petroleum in data needs

- Performed training seminars for client companies
- Facilitated BP data enhancements as head analyst for the project

Genscape (Now Wood Mackenzie)

Data Analyst Intern

- Improved methods of forecasting international natural gas exports
- Identified errors in EIA data set, these were confirmed and corrected by EIA

SKILLS

Economic Reports: Beamer, Data Visualization

Programming: R, GAMS, SQL, Bash, C/C++, VBA

Technical Tools: LATEX, IMPLAN, Qualtrics, Git, Linux Server, Web Hosting, Cryptography

Industry Knowledge: Nuclear, Water & Agriculture, Oil & Gas, Wind, Electricity Grid, Bitcoin

Boulder, CO Summer 2015