



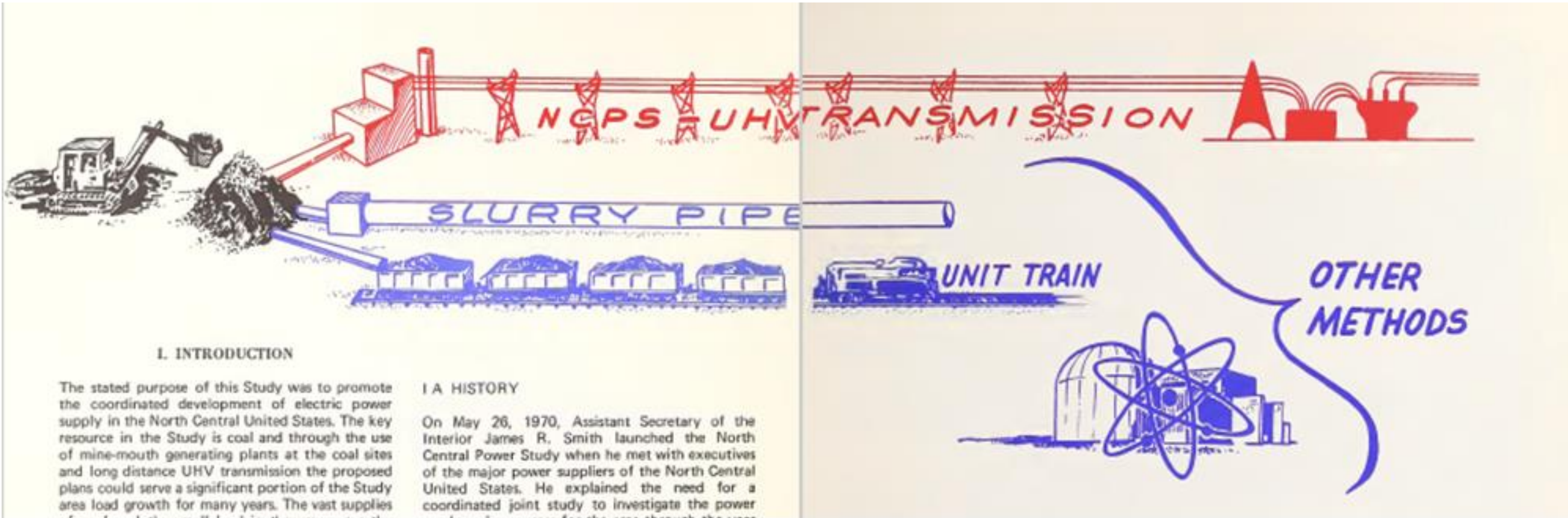
Workforce Wednesdays: Coal Transitions

 HEADWATERS
ECONOMICS

National Energy Policy: Domestic, Cheap, Reliable Coal



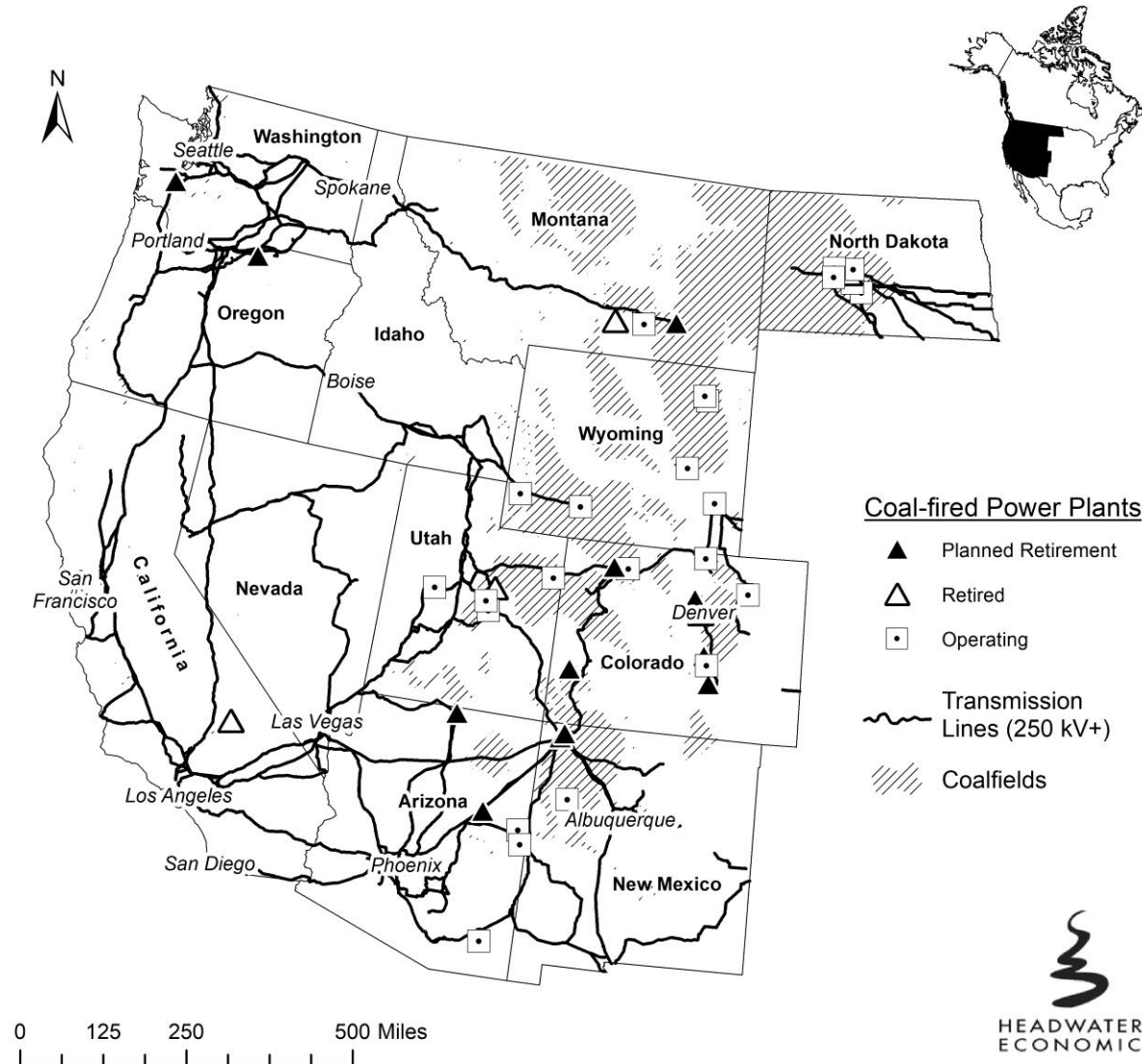
Coordinated Regional Planning



North Central Power Study, Part 1. 1971.

“Big Buildup” of Coal Generation Capacity

Coal Electricity Infrastructure and Major Cities in the U.S. West



Source: 2018. Haggerty, J. H. et al. Planning for the Local Economic Impacts of Coal Facility Closure: Emerging Strategies in the American West. *Resources Policy* 57(Aug.): 69-80. doi: 10.1016/j.resourpol.2018.01.010

States Define The Social License to Operate



Where Are We Today?

WHO IS RESPONSIBLE FOR COLSTRIP'S TRANSITION?



	POLICY DOMAIN	TIMELINE	WHAT'S HAPPENING
CITY & AMENITIES	STATE & LOCAL	ONGOING	No requirements to replace lost revenue. Efforts will be state and local, and may include higher taxes, budget cuts, state assistance and negotiations with owners.
WORKERS & UNIONS	COMPANY & UNION NEGOTIATIONS	2022 & ONGOING	There are no formal plans so far for worker retention, retirement, retraining or other compensation packages; these would be negotiated between owners, unions and the state.
EFFLUENT PONDS	STATE & FEDERAL	ONGOING	A 2012 Administrative Order of Consent established a multi-step process for assessing and mitigating groundwater contamination from leaking coal ash ponds. Owners submit a plan and funding proposal to DEQ in Summer 2017.
COLSTRIP PLANT	FEDERAL & STATE	UNITS 1 & 2 2022 UNITS 3 & 4 2035?	A 2016 legal settlement related to federal clean air regulations set a 2022 date for Units 1 & 2. The plant operators report they may shut down operations sooner due to market and financial pressures.
ROSEBUD MINE	STATE & FEDERAL	ONGOING	Mine operates mostly on Bureau of Land Management leases. Federal and state requirements govern the reclamation process.
RAIL ROAD	BNSF	ONGOING	The railroad represents an asset and opportunity, but there are no plans or requirements that it be utilized for a specific purpose.
TRANSMISSION LINES	PLANT OWNERS & ENERGY DEVELOPERS	ONGOING	Capacity on the transmission lines may be repurposed after Units 1 and 2 close. Private wind and geothermal developers are interested, but no proposals or processes are in place.
WATER RIGHTS	PLANT OWNERS & CITY	ONGOING	City is dependent on water delivery. The plant's water right also is an asset that could support other industry.

Lack of Policy Framework

Uncoordinated, contradictory planning environment

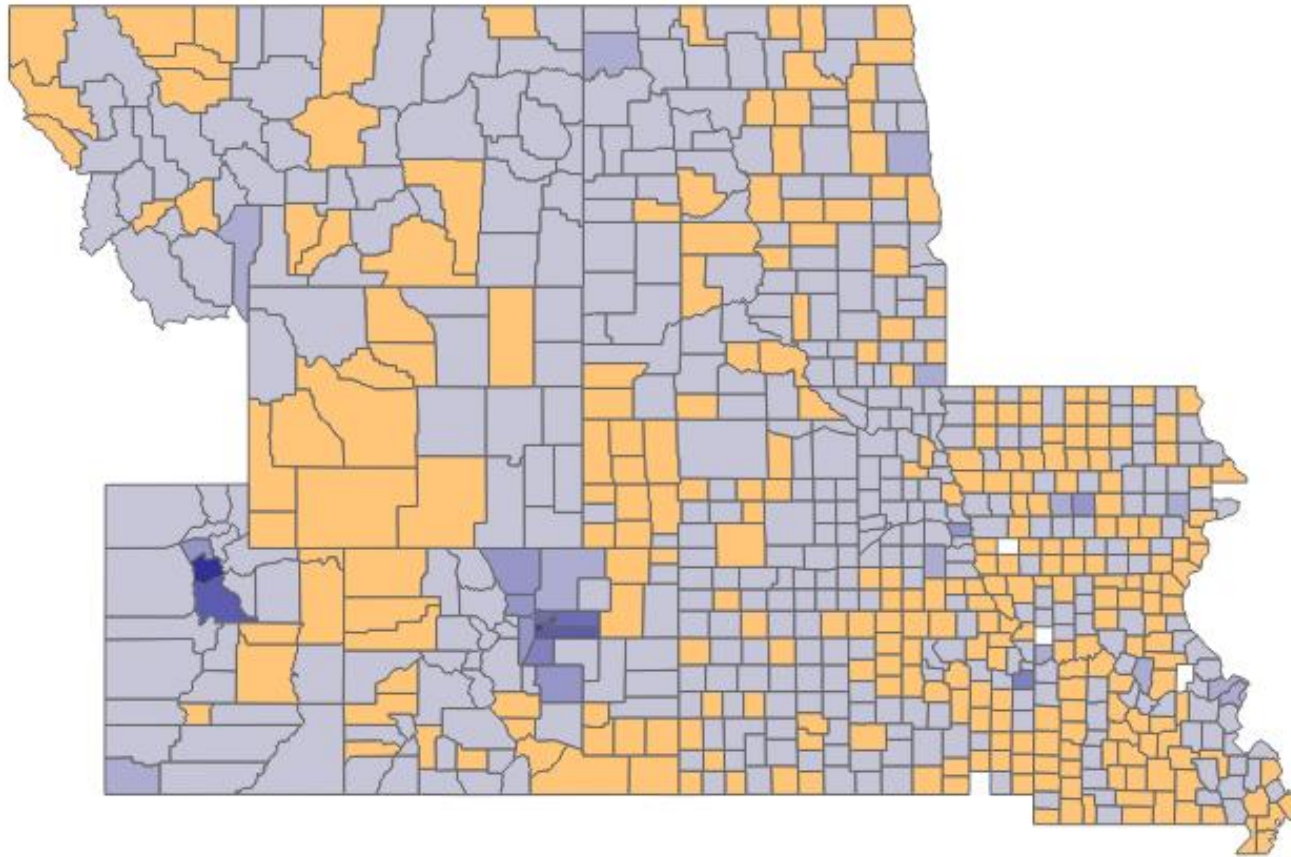
Outcome is dependent on local capacity

Misallocation of time and resources, planning fatigue

Lack of appropriate regional examples and peer to peer learning

Changing Economic Geography

Change in Employment, 2007-2017. U.S. EDA Denver Region



CO's Front Range
UT's Washach Front
cities captured

50% of all new jobs since
2007

46% of Rural Counties
have **Fewer Jobs** in 2017



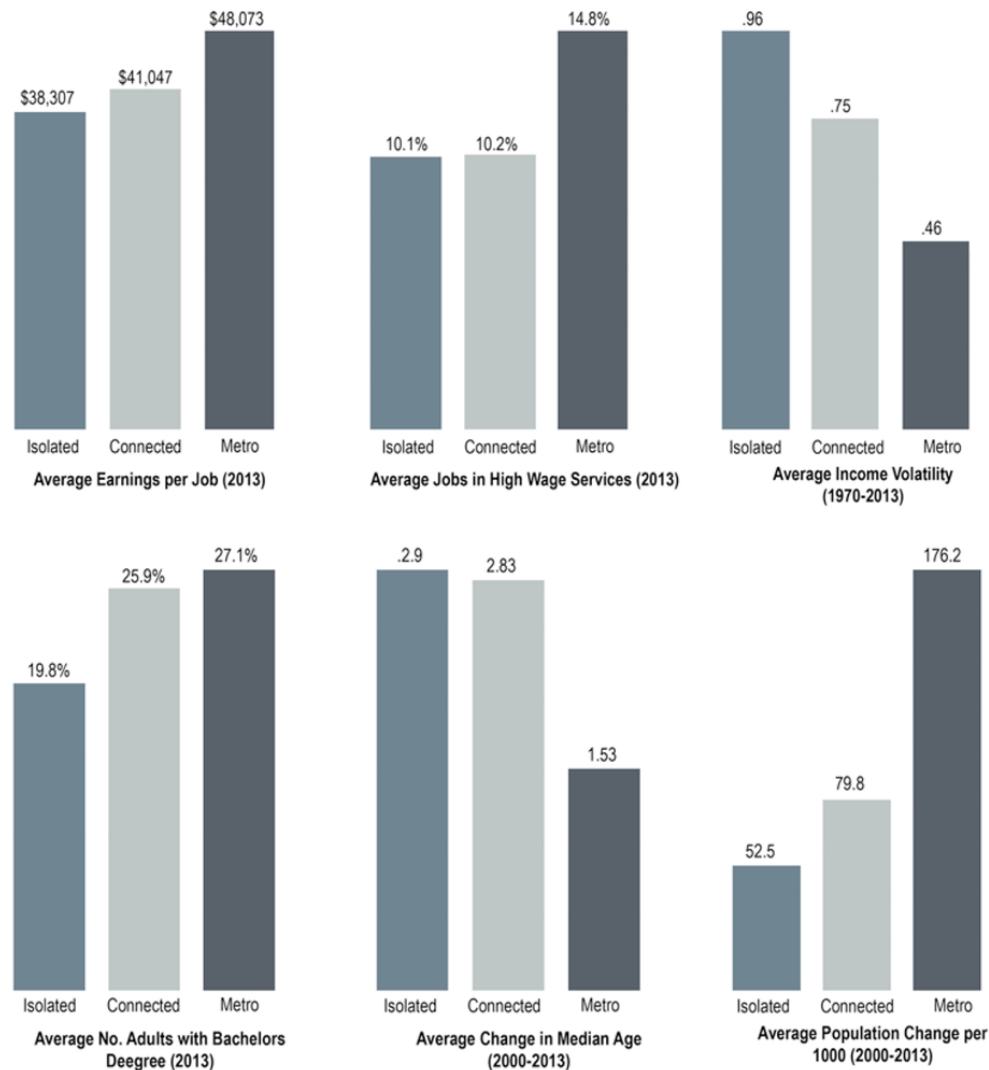
Job Loss

Job Gain

Geography Affects Workforce Opportunity

J.H. Haggerty et al.

Resources Policy xxx (2018) xxx-xx



Isolated and “Double-Isolated” plants are more vulnerable to change

Fig. 2. Economic and demographic vulnerability indicators for county cohorts. Sources: Authors from the following U.S. Department of Commerce data sources: Bureau of Economic Analysis, Regional Economic Accounts, County Business Patterns, American Community Survey, Systems Support Division.

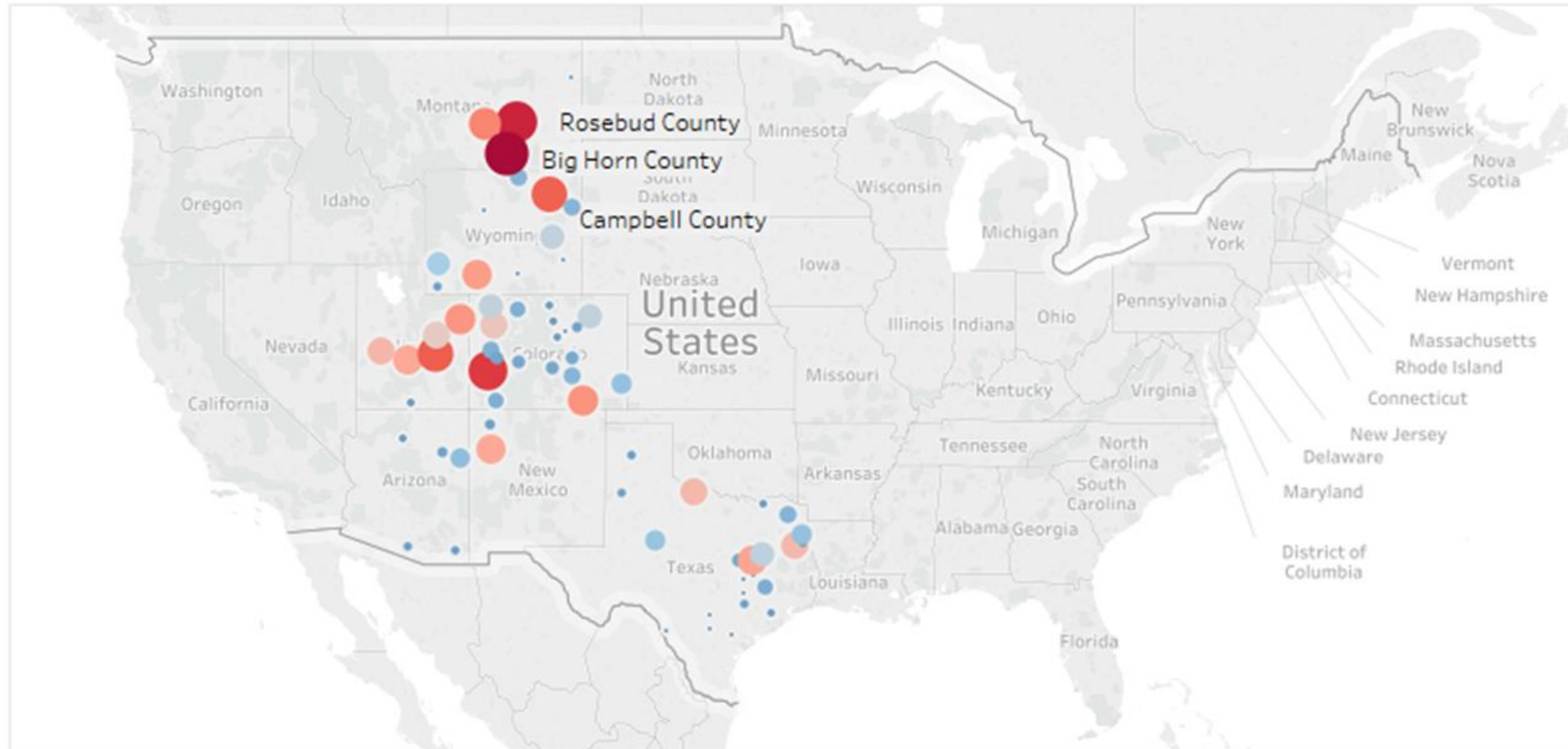
Fiscal Policy Harms Communities and Slows Transition



Transition Risks in Fiscal Terms

County Government Dependence on Revenue from Coal

Property Tax, Severance Tax, and Mineral Royalty Share of Total Governmental Revenue



Assessing Coal Transition Policies



Addressing lost revenue

- Revenue as key legacy (Haggerty and Haggerty 2015)
- Investment for transition (Boettner et al 2012, Gunton, 2003 Markey et al 2008)
- Investment for competitive advantage (Ryser and Halseth, 2010)



Understanding economic geography

- Identify competitive advantage (Beale, 2017)
- Recognize limits (MacKinnon et. al. 2002)
- Reality of downsizing (Hollander et. al. 2009)



Linking restoration and economic development

- Restoration economy as viable sector (BenDor et. al. 2014; Hibbard and Lurie 2013)
- Amenities key to growth (Deller et. al. 2001)
- Contamination as disadvantage (Goetz et. al. 2017)



Transition outlook: willingness to change

- Bridging/bonding social capital (Putnam 2002; Kulig et. al. 2008)
- Acceptance of change is resilient (Boutilier 2018; Kinnear and Ogden 2014)
- Avoid cognitive lock-in (Hudson 2005)

An aerial photograph of a town and river valley, overlaid with a light blue grid. The town is situated along a river, with a bridge crossing it. The surrounding landscape is a mix of green fields and brown, eroded hills. The sky is blue with some clouds.

Thank You

The logo for Headwaters Economics, featuring a stylized white wave icon to the left of the text.

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