

Shale Public Finance

Local government fiscal impacts of oil and gas development

*Richard Newell, Gendell Professor of Energy and Environmental Economics,
Nicholas School of the Environment*

*Daniel Raimi, Associate in Research, Duke University Energy Initiative;
Research Specialist, University of Michigan Energy Institute*

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Resources for the Future

Presentation overview

- Overview of the Shale Public Finance project
- Major oil and gas related revenues for local governments
- Major oil and gas related service demands (i.e., costs) for local governments
- Net fiscal impacts of oil and gas development for local governments
- Case study: North Dakota's Bakken region
- Analysis and conclusions

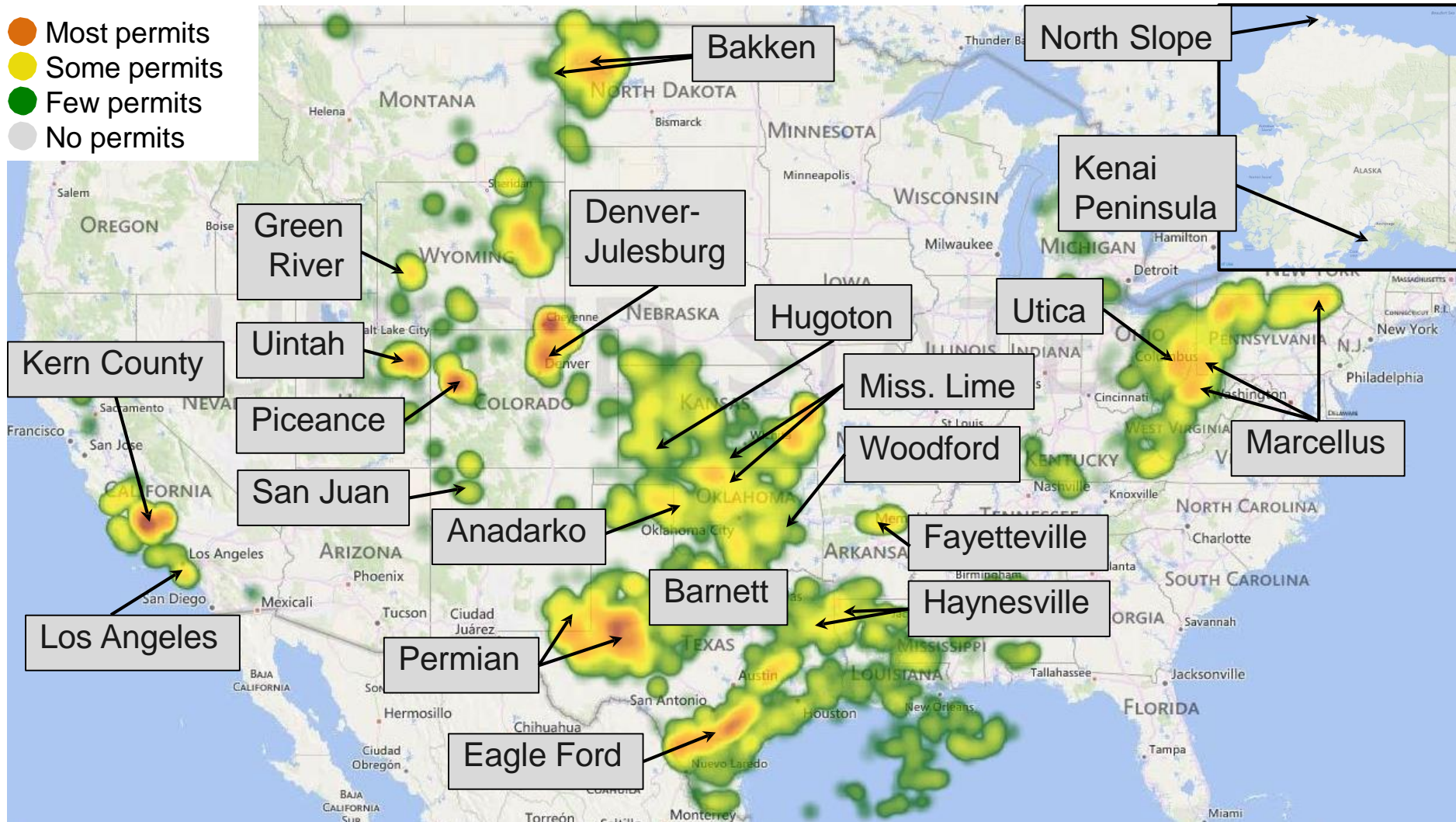
Shale Public Finance project

- Supported by
 - The Alfred P. Sloan Foundation
 - Duke University Energy Initiative
- Carried out at Duke University
 - Richard Newell, principal investigator
 - Daniel Raimi, key researcher and analyst
- Conducted in two phases
 - Phase I: 2013-2014, 8 states
 - Phase II: 2014-2016: 8 additional states
- Today we are releasing four new reports
 - Net fiscal impacts of oil and gas development for local governments
 - Oil and gas revenue for local governments in 16 states
 - Case study of North Dakota's Bakken region
 - Case study of Colorado's Piceance Basin region

Research methods

- Examine every major onshore oil- and gas-producing region in the United States (21 regions in 16 states)
- Structured interviews with over 200 local public officials
 - 61 counties, 78 municipalities, 12 other local government entities
- Interviews with experts from state government, industry, and independent researchers
- Two workshops with local and state officials, expert researchers, and industry representatives
- Analysis of state and local financial documents and policies

Our travels: heat map of recent drilling permits



Map source: Drilling Info 2.0. Heat map data represents drilling permits issued in the 90 days leading up to Feb. 20, 2015. Permit data not available for Alaska.

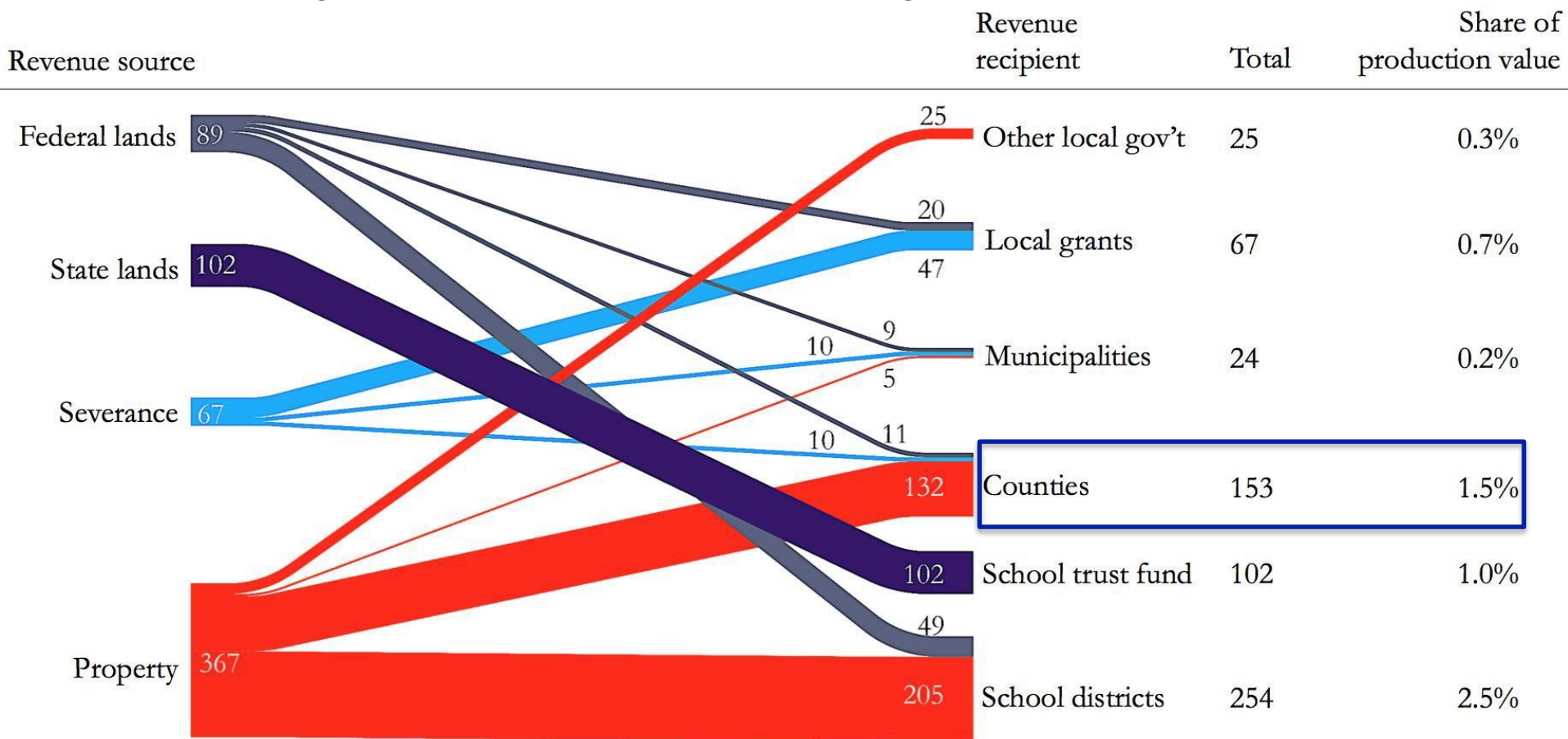
Key revenue sources for local governments related to oil and gas development

Key revenue sources for local governments

- Local ad-valorem property taxes
 - Collected by local governments, oil and gas property definitions vary by state
- State severance taxes
 - Collected by state governments, may or may not be allocated to local level
- State or federal leasing revenue
 - Collected by state governments, may or may not be allocated to local level
- Sales and use taxes
 - Collected by municipal governments in most states, counties in some states
- Direct payments
 - Leasing/royalty revenues for production on local government land
 - Fee-for-service activities
- In-kind contributions
 - Road repairs and/or donations from oil and gas companies

Revenue flows from oil and gas production to local governments vary by state

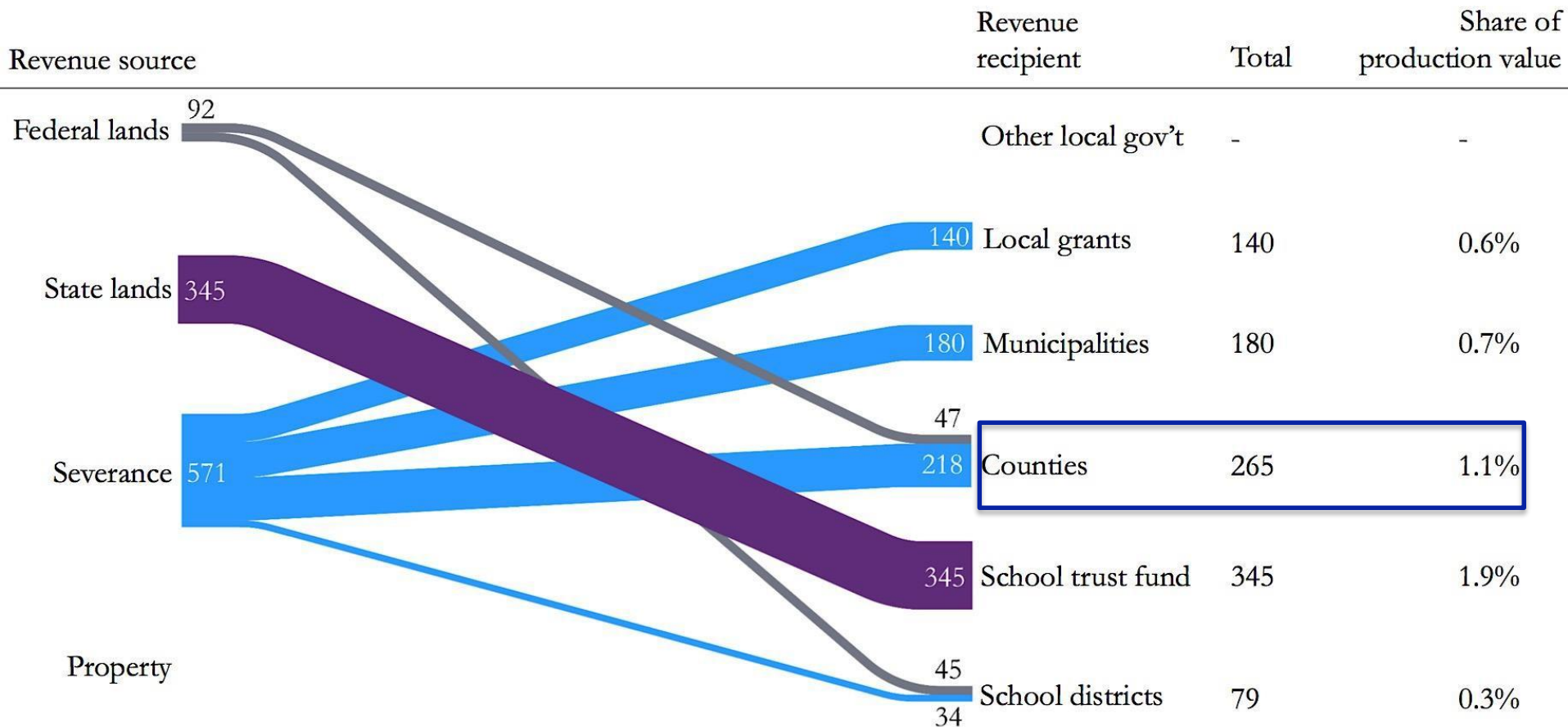
FY 2013 Local government revenue from oil and gas production in Colorado (\$ millions)



Source: Raimi and Newell 2016, Local government revenue from oil and gas production

Revenue flows from oil and gas production to local governments vary by state

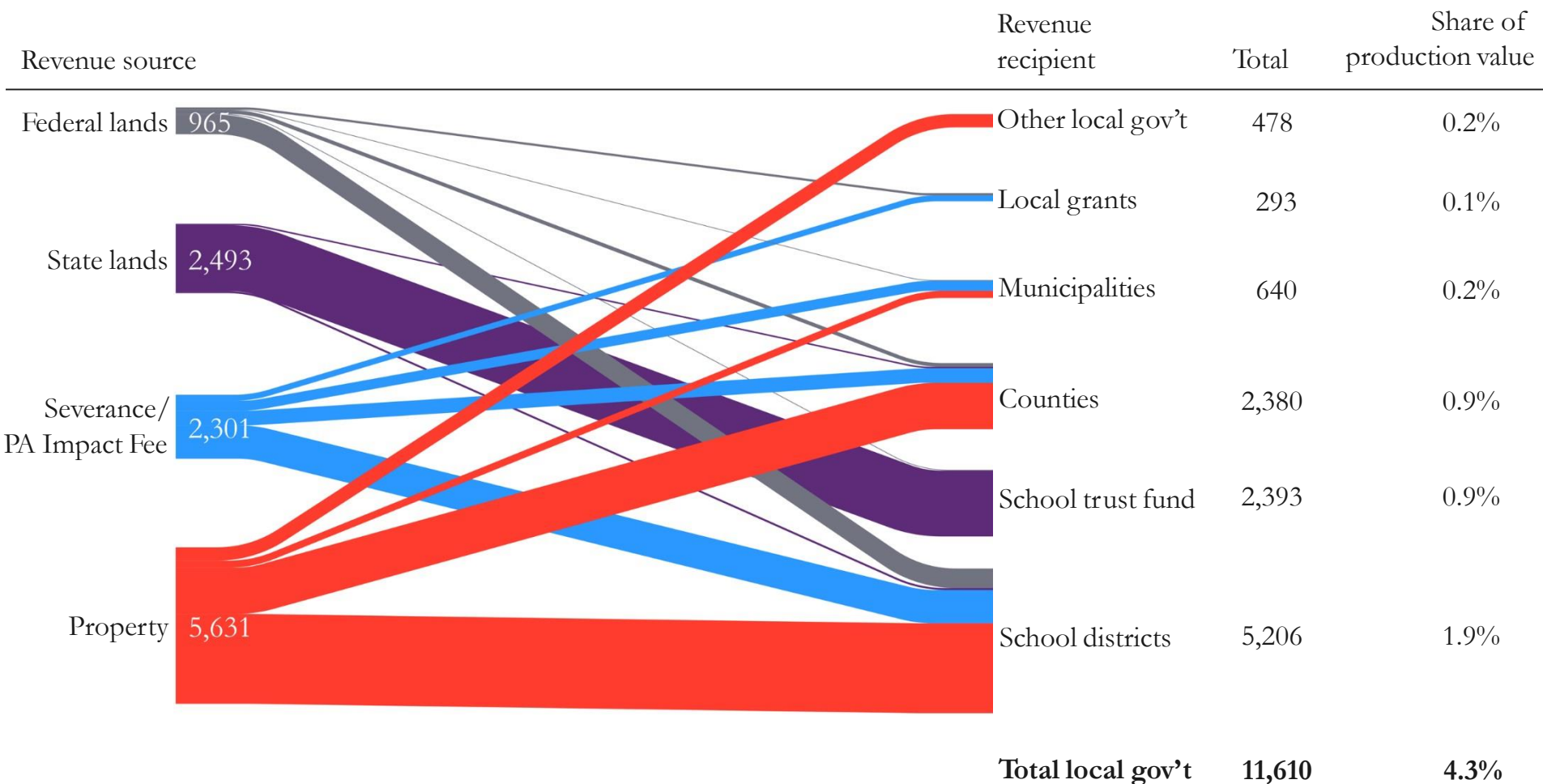
FY 2013 Local government revenue from oil and gas production in North Dakota (\$ millions)



Source: Raimi and Newell 2016, Local government revenue from oil and gas production

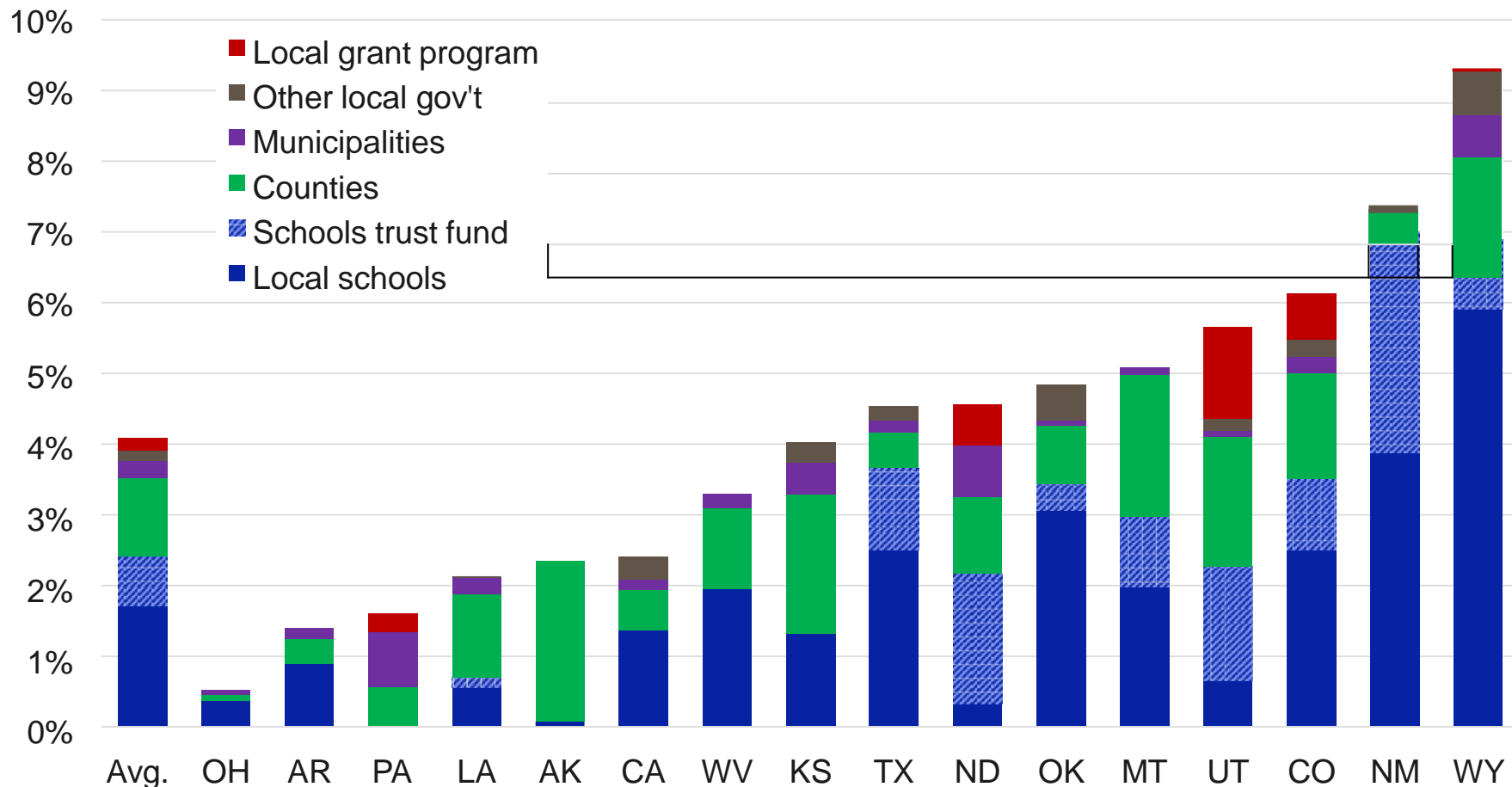
Total revenue flows to local governments

FY 2013 Local government revenue from oil and gas production in 16 states (\$ millions)



Source: Raimi and Newell 2016, Local government revenue from oil and gas production

Total share of oil and gas revenue flowing to local governments in FY 2013

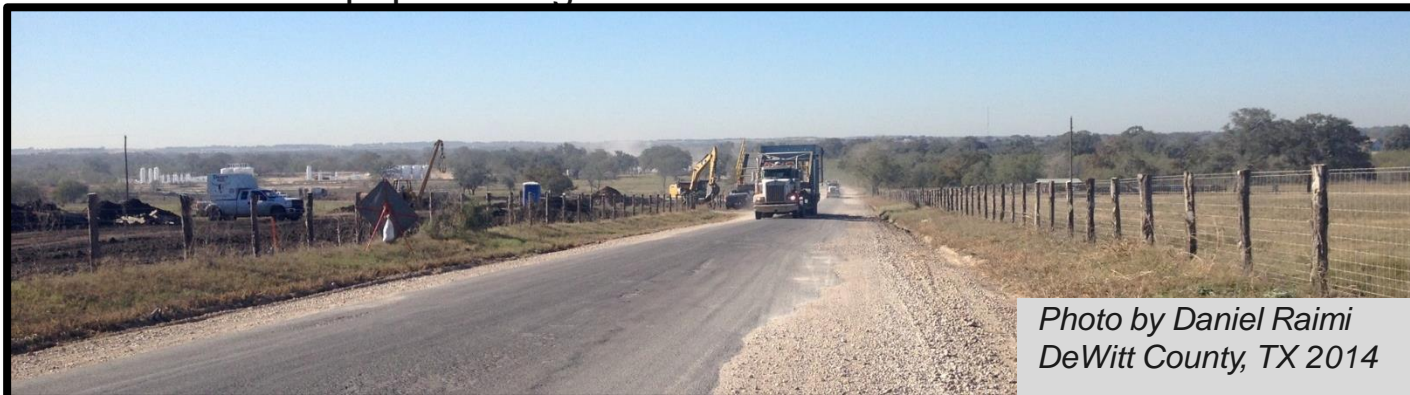


Source: Raimi and Newell 2016, *Local government revenue from oil and gas production*. Figure shows revenue flowing to local governments from state severance taxes, local property taxes on oil and gas property, state oil and gas lease revenues, and federal oil and gas lease revenues.

Key costs for local governments related to oil and gas development

Roads, bridges, and other infrastructure can be affected by industry traffic and population

- Roads and bridges
 - Heavy industry truck traffic can damage roads and bridges
 - This is the most common major cost for local governments, particularly counties
 - Challenge is greatest when the industry is most active
- Water and wastewater infrastructure
 - May require upgrades if municipalities experience rapid population growth
 - Observed mostly in rural western regions (CO, MT, ND, WY)
 - These long-term investments can create fiscal challenges if industry activity and associated population growth slows



*Photo by Daniel Raimi
DeWitt County, TX 2014*

Local governments may face a range of increased staff costs

- Police/fire/EMS
 - Increased vehicle traffic, well site accidents, population can increase demand
 - Specialized training and equipment may be necessary
- Other staff costs
 - Workforce retention is often a challenge during periods of industry growth



A small number of local governments have faced environmental-related costs

- Induced seismicity associated with wastewater injection
 - Quakes in OK/KS Mississippian Lime region pose risks for county property
 - There may also be some risk to private property values in the region
- Legacy environmental damage
 - Cities in Los Angeles County have encountered increased construction costs for infrastructure projects due to abandoned oil wells and infrastructure

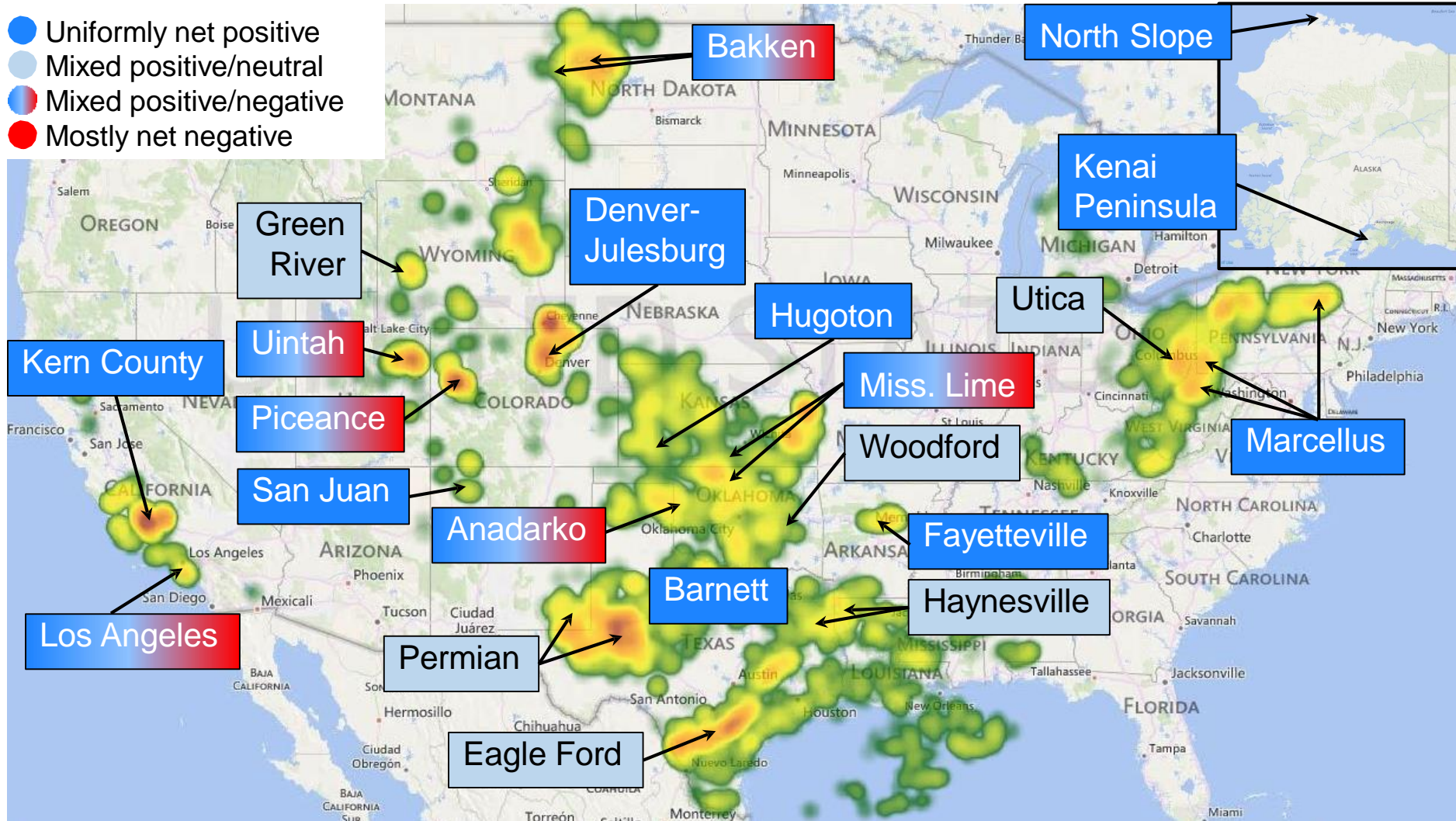


*Photo by Daniel Raimi
Harper County, KS 2015*

Net fiscal impacts for local governments

Summary of net local government fiscal effects: 2013-2015

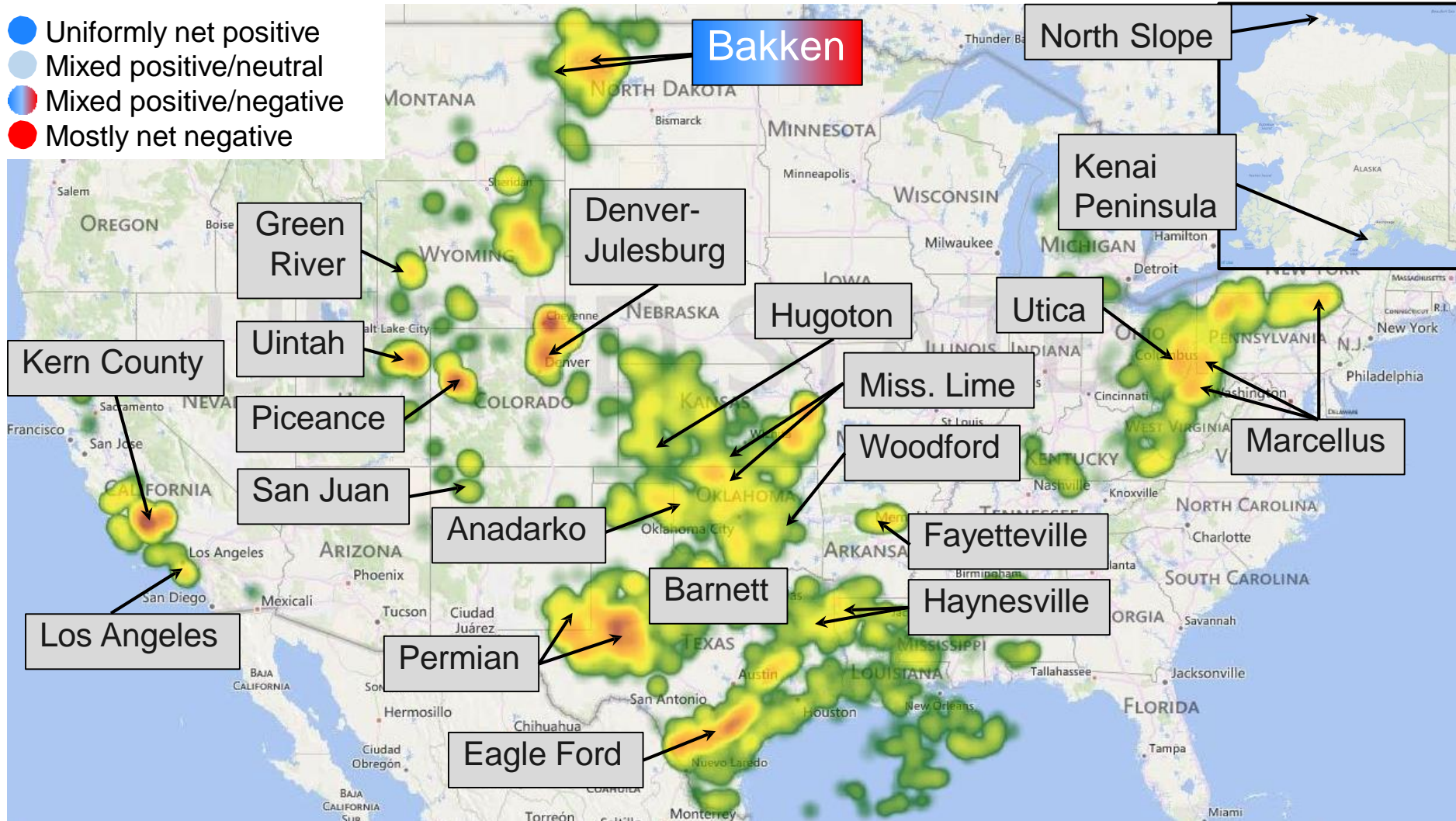
- Uniformly net positive
- Mixed positive/neutral
- Mixed positive/negative
- Mostly net negative



Source: Raimi and Newell, 2016. Map source: Drilling Info 2.0. Heat map data represents drilling permits issued in the 90 days leading up to Feb. 20, 2015. Permit data not available for Alaska.

Case study: North Dakota's Bakken shale region

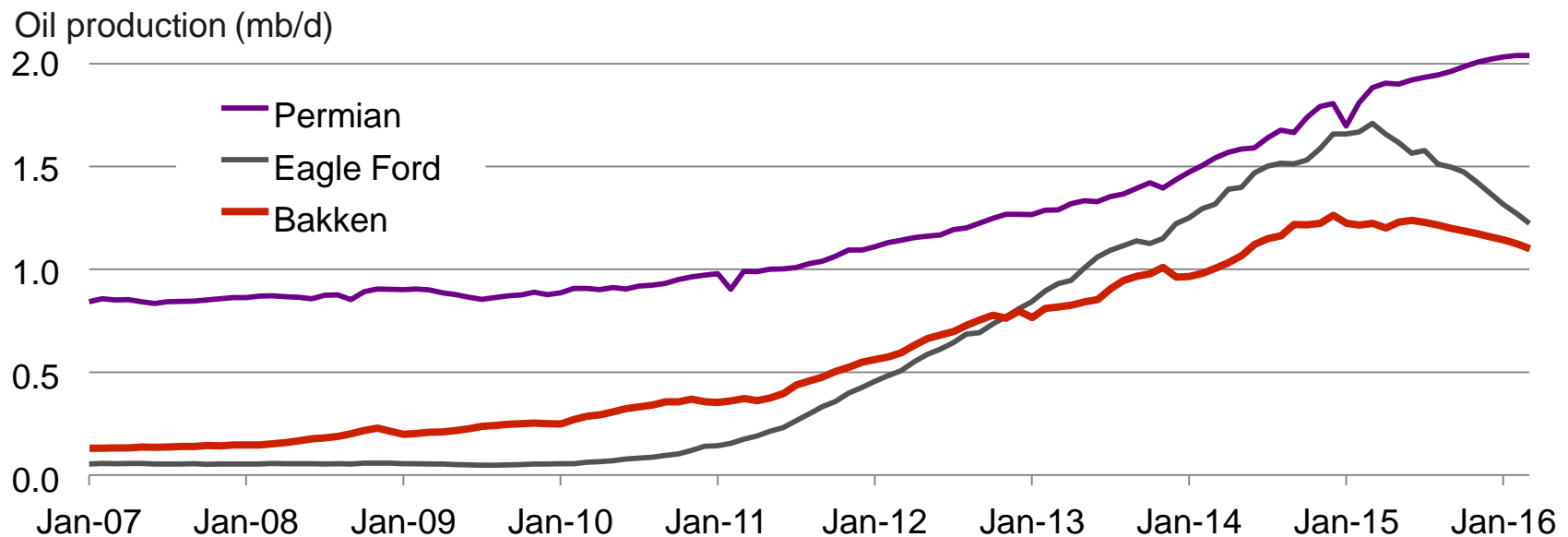
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Map source: Drilling Info 2.0. Heat map data represents drilling permits issued in the 90 days leading up to Feb. 20, 2015. Permit data not available for Alaska.

The Bakken region is highly rural and has experienced rapid growth

Region	Population density (persons/sq. mile, 2010)	Rural-urban continuum code (2013, 9=most rural, 1=most urban)
Bakken	5.6	8.2
Permian	20.0	6.4
Eagle Ford	40.7	5.2



Sources: Population density estimates from the U.S. Census Bureau. Rural-urban continuum codes from the U.S. Department of Agriculture. Oil production and regional definitions from the U.S. Energy Information Administration.

Local governments reported in 2013 that revenues were not keeping up with demand for services

- Revenues had grown rapidly, but not as rapidly as costs
- Municipalities
 - Major growth in demand for all services
 - Several were taking out >\$100M in debt for new road and water/wastewater infrastructure
 - Doubling, tripling, or quadrupling workforce while labor & housing costs soared
- Counties
 - Unable to keep up with demand for road repair
 - Also facing major new staff costs



*Photo by Daniel Raimi
Williams County, ND 2013*

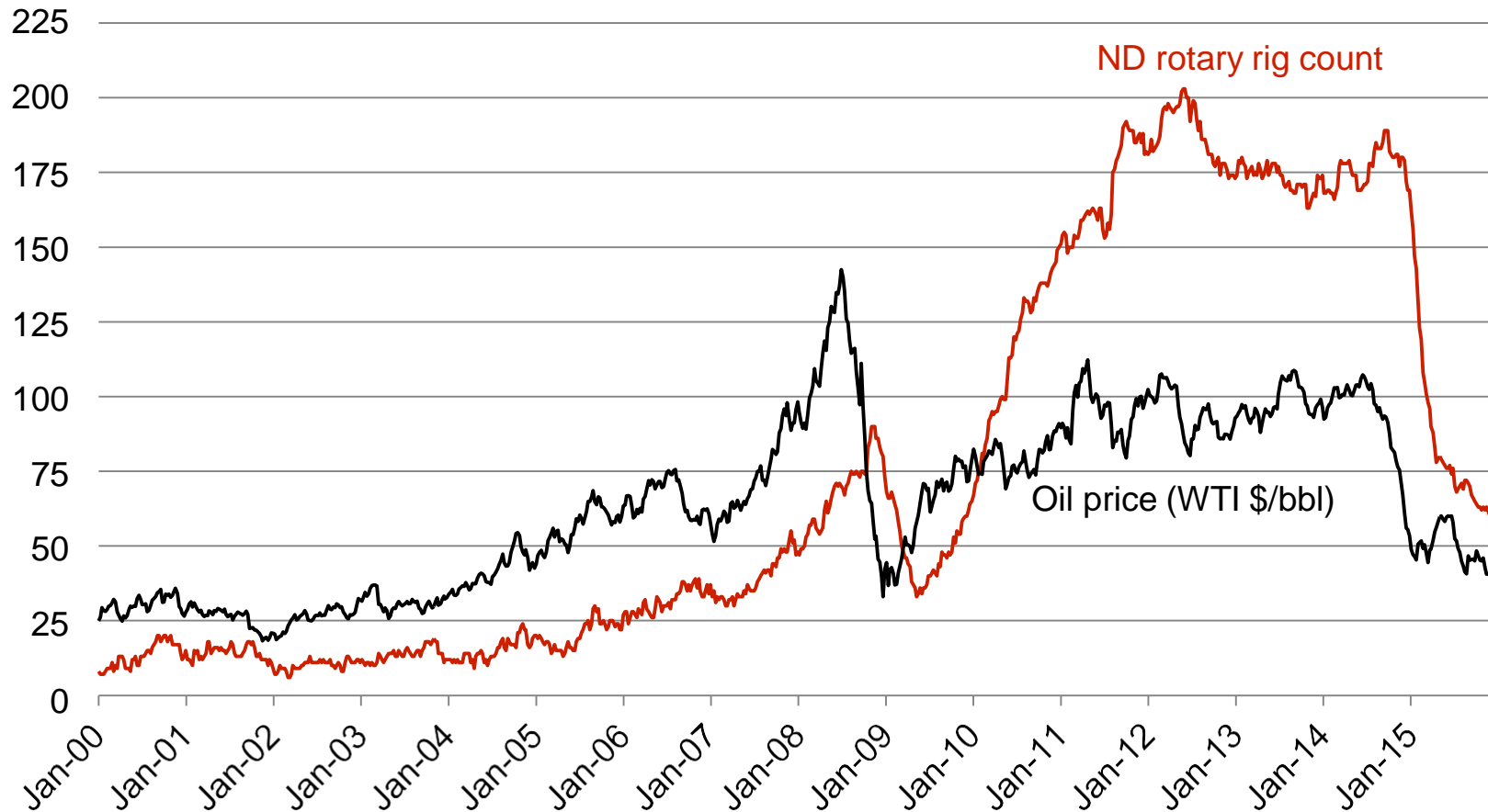


*Photo by Daniel Raimi
McKenzie County, ND 2013*

When we visited again in late 2015, some challenges had faded

- Partly due to market factors
- Partly due to policy factors

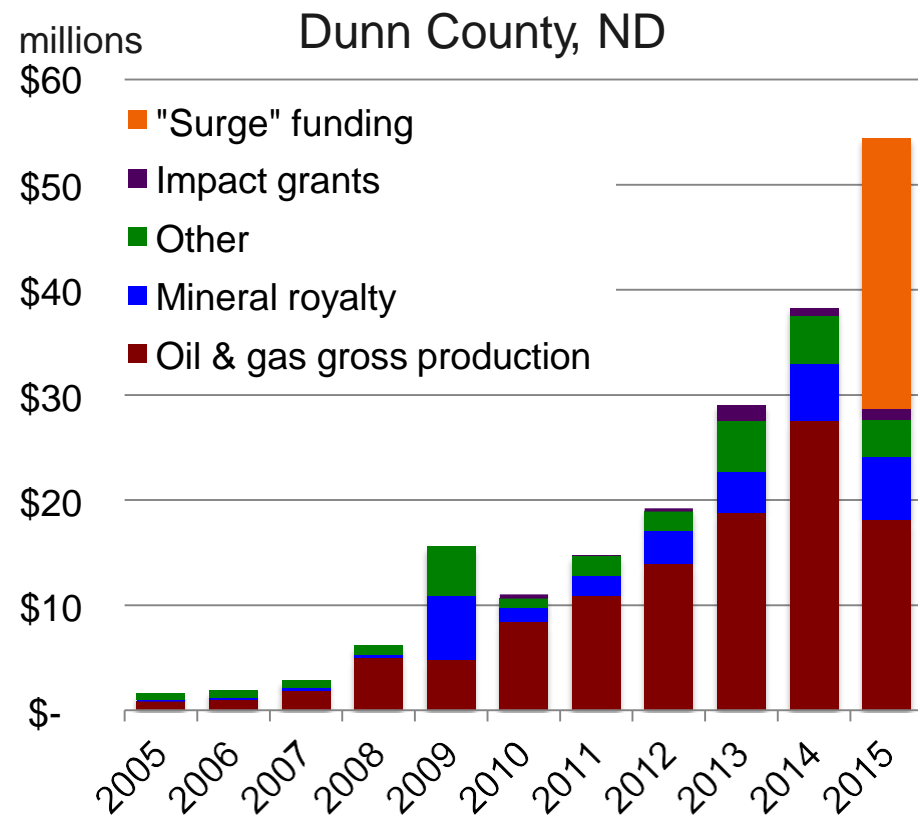
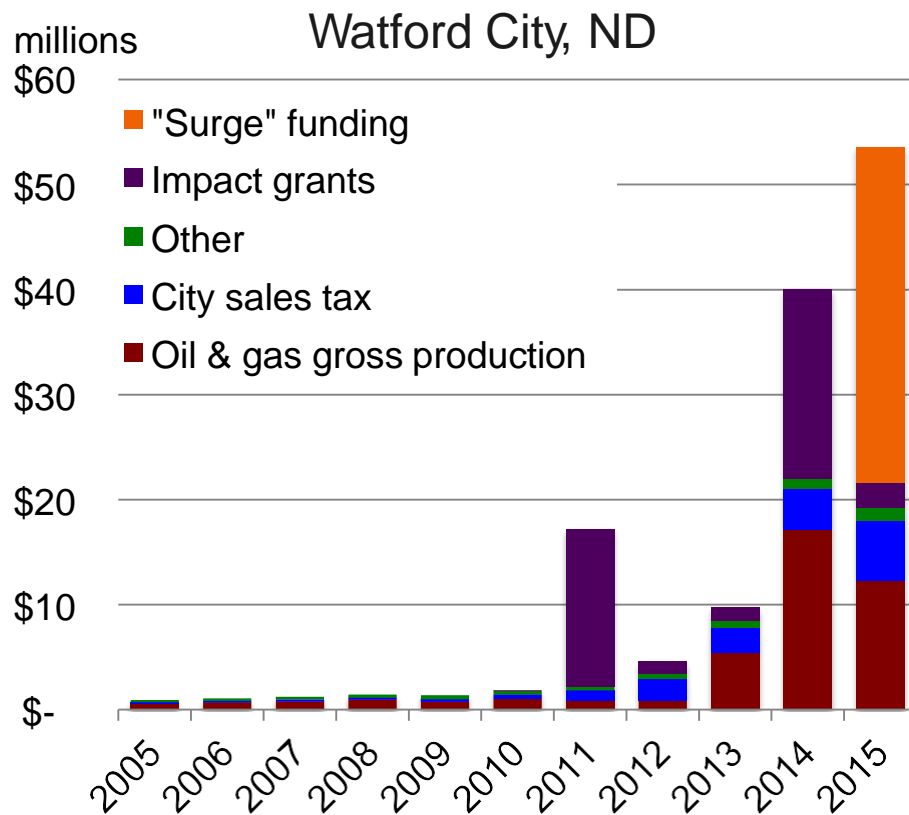
Lower oil prices have slowed drilling activity, truck traffic, and population growth



Data sources: BakerHughes for rig count, U.S. EIA for West Texas Intermediate spot price (nominal dollars)

State policy changes allocated additional revenue to localities

- 2015 legislation allocated a larger proportion of severance tax revenues to localities, along with one-time “surge” funding



Source: Raimi and Newell 2016, *Dunn County and Watford City, a case study of Bakken development*

While near-term issues have eased, long-term challenges remain

- Counties are having less difficulty maintaining roads and bridges
- Local governments have expanded to serve their larger populations
- But some municipalities now hold hundreds of millions of dollars in debt, and public revenues are falling due to low oil prices
 - Slow growth over the longer term could create major fiscal challenges
- Economic diversification is a priority for local policymakers, but will likely be a challenge

In summary: analysis and conclusions

- Most local governments report net positive fiscal impacts
- But local factors and policies matter
 - Design of revenue collection and allocation mechanisms can significantly affect local finances
 - In rural regions with heavy activity, infrastructure costs can outpace revenues
 - Environmental issues have imposed substantial costs in a few locales
 - Collaboration with industry can help reduce infrastructure costs
- Revenue volatility can be a major challenge
 - Policies in some regions exacerbate, rather than smooth out this volatility
- Regions with declining production face distinct issues
 - Economic diversification will be a challenge for some regions

For more information

Daniel Raimi

Associate in Research
Duke University Energy Initiative
daniel.raimi@duke.edu

Research Specialist
University of Michigan Energy Institute
draimi@umich.edu

Richard G. Newell

Gendell Professor of Energy and
Environmental Economics
Duke University Nicholas School of
the Environment
richard.newell@duke.edu

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