How Oil and Gas Development Affects Local Governments and Communities
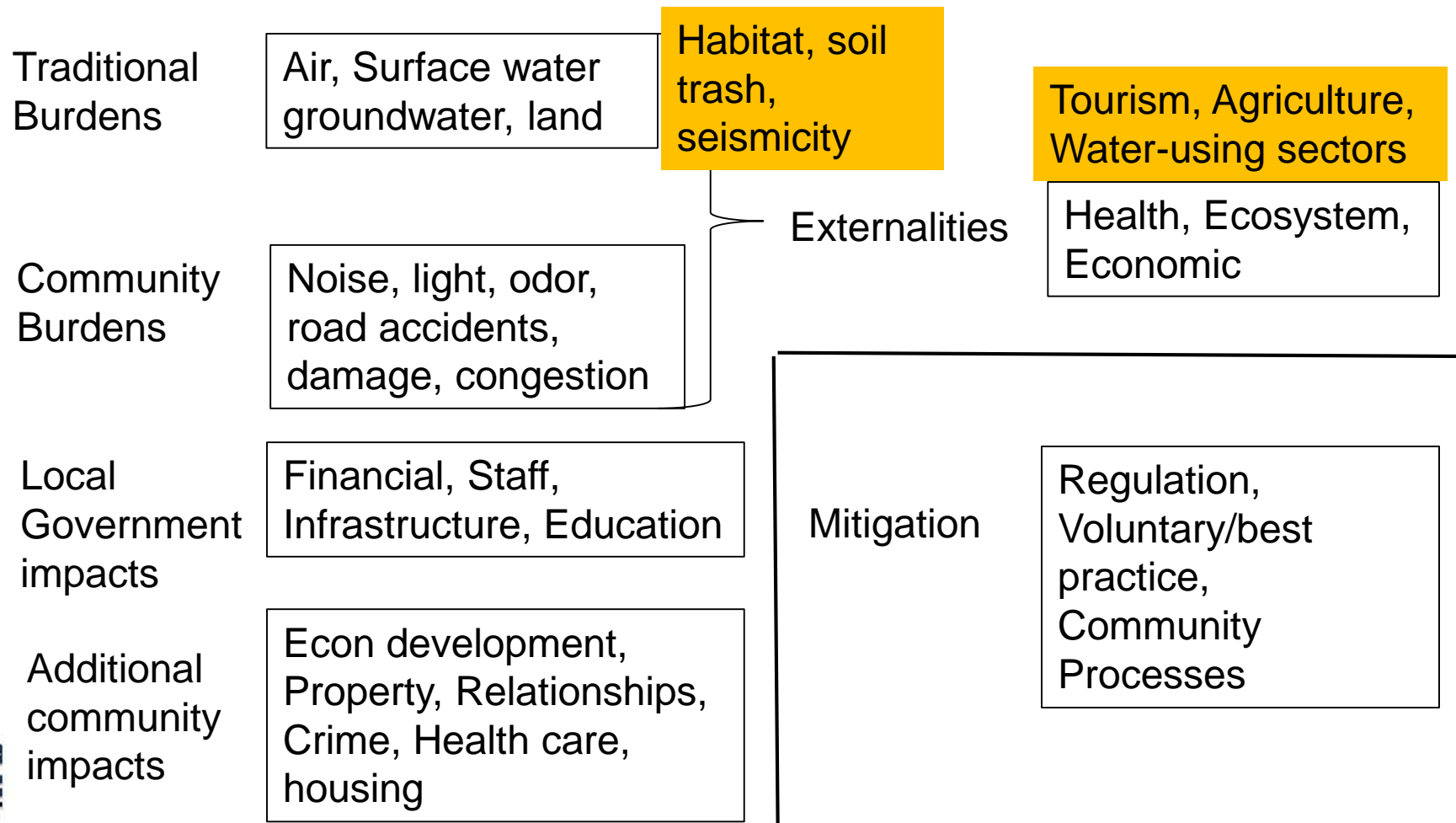
Alan Krupnick
Co-Director of Center for Energy and Climate Economics
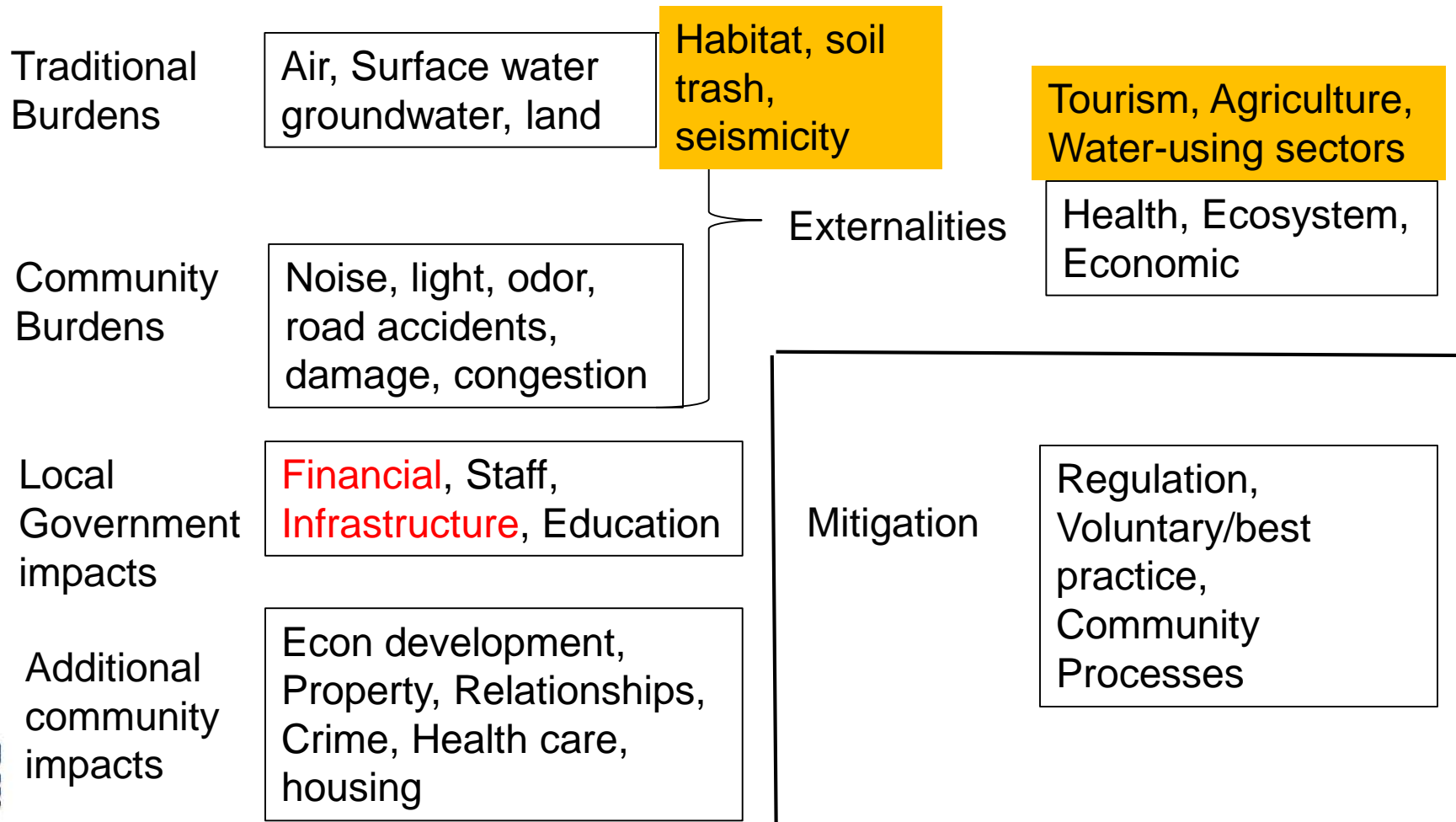
RESOURCES FOR THE FUTURE

RFF Seminar, May 18, 2016

Community Impacts and Interactions Initiative

SGD Stages: Initial Assessment ➜ Leasing/Permitting ➜ Exploration ➜ Development ➜ Production ➜ Plugging and Abandonment

Traditional Burdens — Air, Surface water groundwater, land

Habitat, soil trash, seismicity

Tourism, Agriculture, Water-using sectors

Externalities — Health, Ecosystem, Economic

Community Burdens — Noise, light, odor, road accidents, damage, congestion

Local Government impacts — Financial, Staff, Infrastructure, Education

Mitigation — Regulation, Voluntary/best practice, Community Processes

Additional community impacts — Econ development, Property, Relationships, Crime, Health care, housing
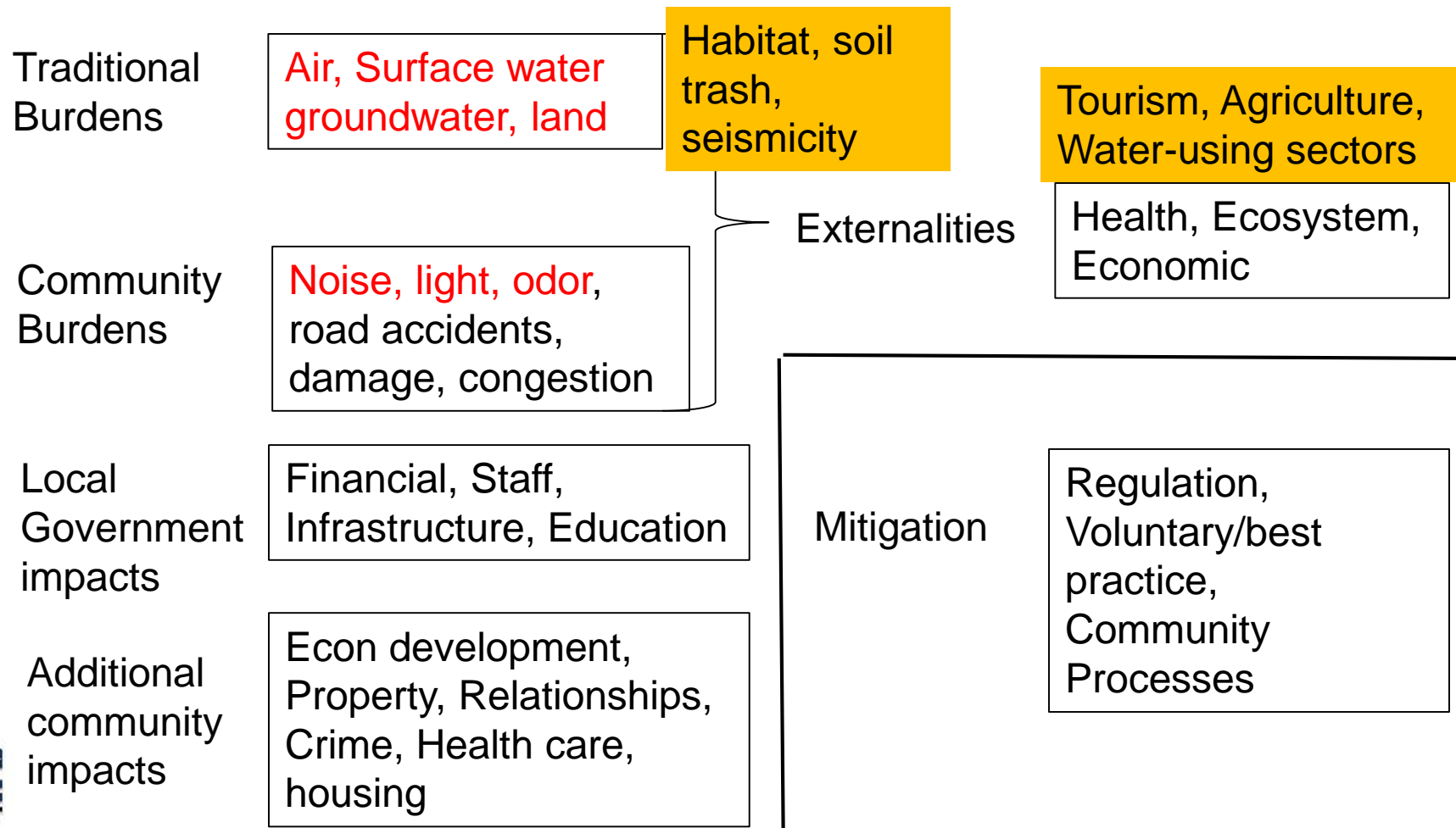
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Fiscal Impacts (Newell and Raimi)

SGD Stages: Initial Assessment ➜ Leasing/Permitting ➜ Exploration ➜ Development ➜ Production ➜ Plugging and Abandonment

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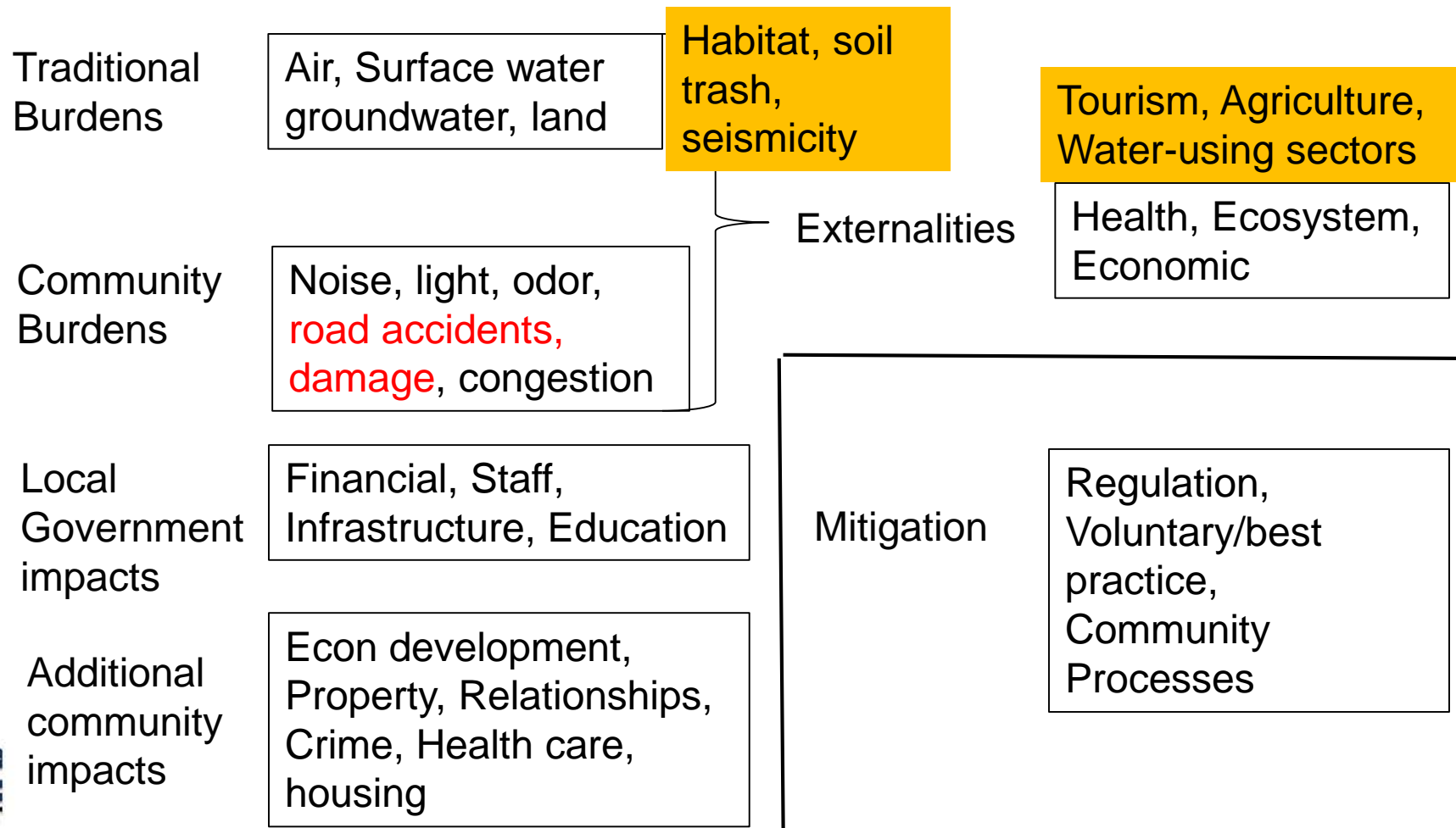**Additional community impacts** — Econ development, Property, Relationships, Crime, Health care, housing

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Leasing

SGD Stages: Initial Assessment ➜ Leasing/Permitting ➜ Exploration ➜ Development ➜ Production ➜ Plugging and Abandonment

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Health, Ecosystem, Economic

Community Burdens

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Local Government impacts

Financial, Staff, Infrastructure, Education

Mitigation

Regulation, Voluntary/best practice, Community Processes

Additional community impacts

Econ development, Property, Relationships, Crime, Health care, housing

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Road Damage and Accidents

SGD Stages: Initial Assessment ➜ Leasing/Permitting ➜ Exploration ➜ Development ➜ Production ➜ Plugging and Abandonment
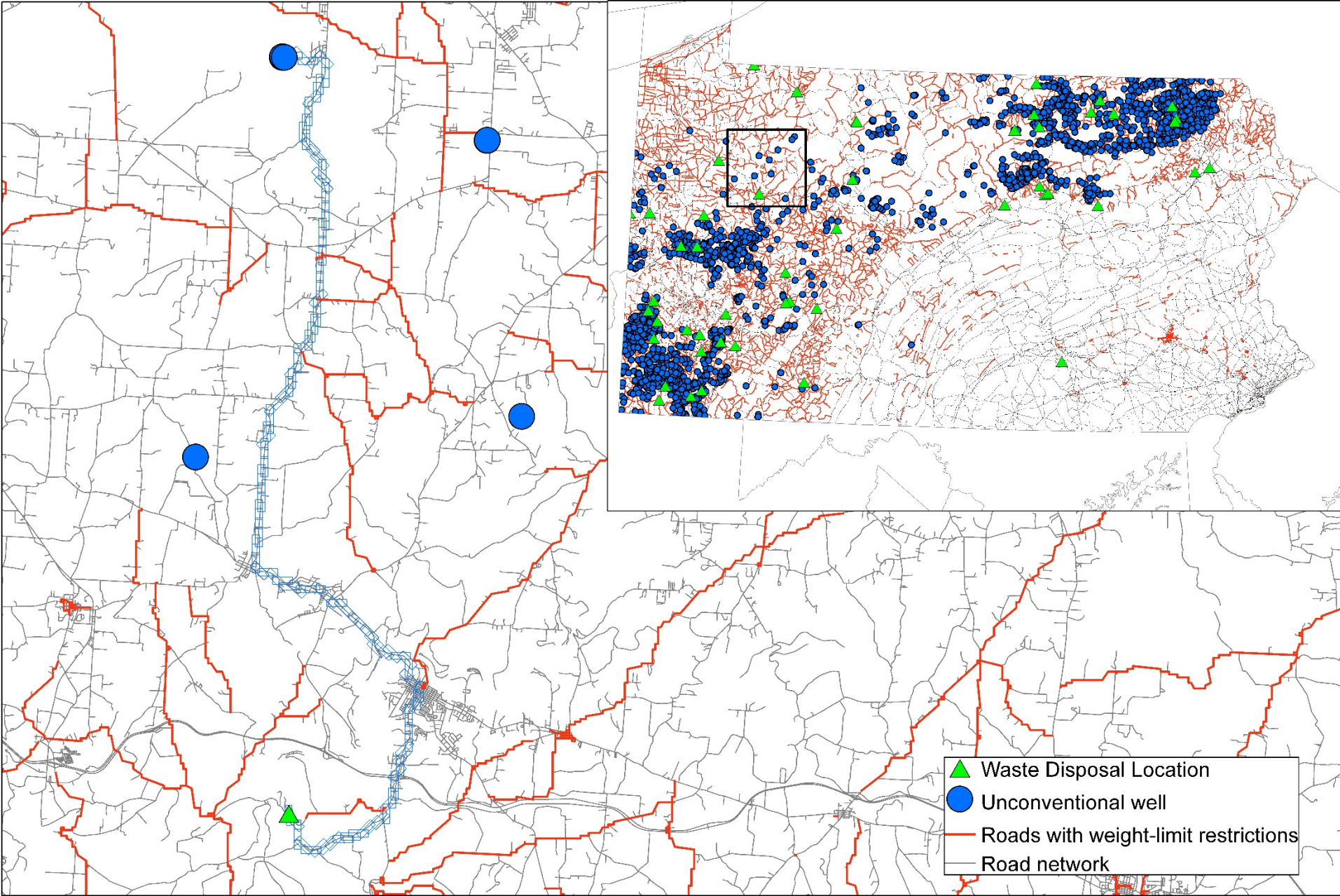
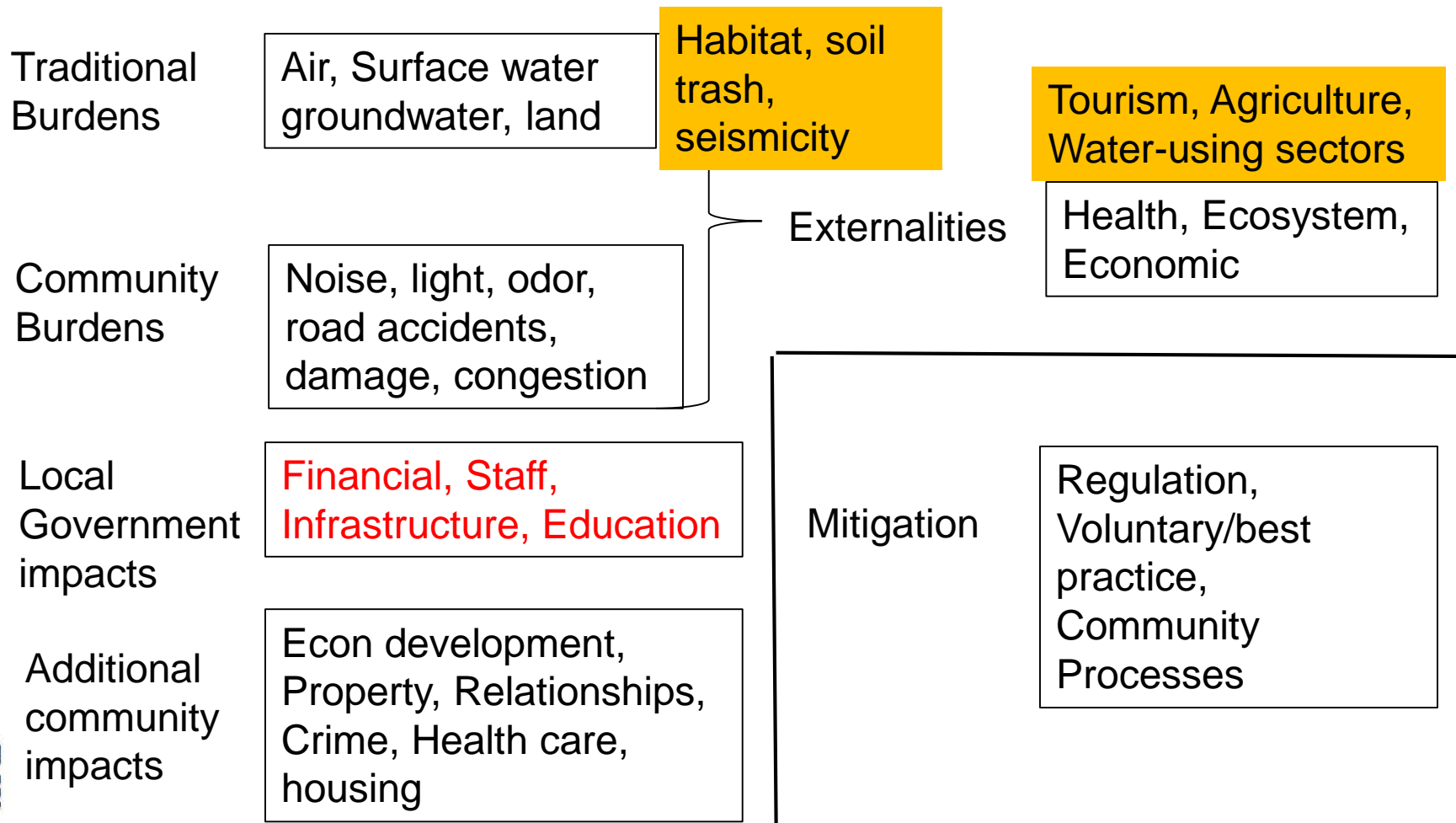|		
Traditional Burdens	Air, Surface water groundwater, land	Habitat, soil trash, seismicity
		Externalities
Community Burdens	Noise, light, odor, road accidents, damage, congestion	

Tourism, Agriculture, Water-using sectors

Health, Ecosystem, Economic

Local Government impacts	Financial, Staff, Infrastructure, Education
Additional community impacts	Econ development, Property, Relationships, Crime, Health care, housing

Mitigation

Regulation, Voluntary/best practice, Community Processes

Legend	
▲	Waste Disposal Location
●	Unconventional well
—	Roads with weight-limit restrictions
—	Road network

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Education

Traditional Burdens

Air, Surface water groundwater, land

Habitat, soil trash, seismicity

Externalities

Tourism, Agriculture, Water-using sectors

Health, Ecosystem, Economic

Community Burdens

Noise, light, odor, road accidents, damage, congestion

Local Government impacts

Financial, Staff, Infrastructure, Education

Mitigation

Regulation, Voluntary/best practice, Community Processes

Additional community impacts

Econ development, Property, Relationships, Crime, Health care, housing
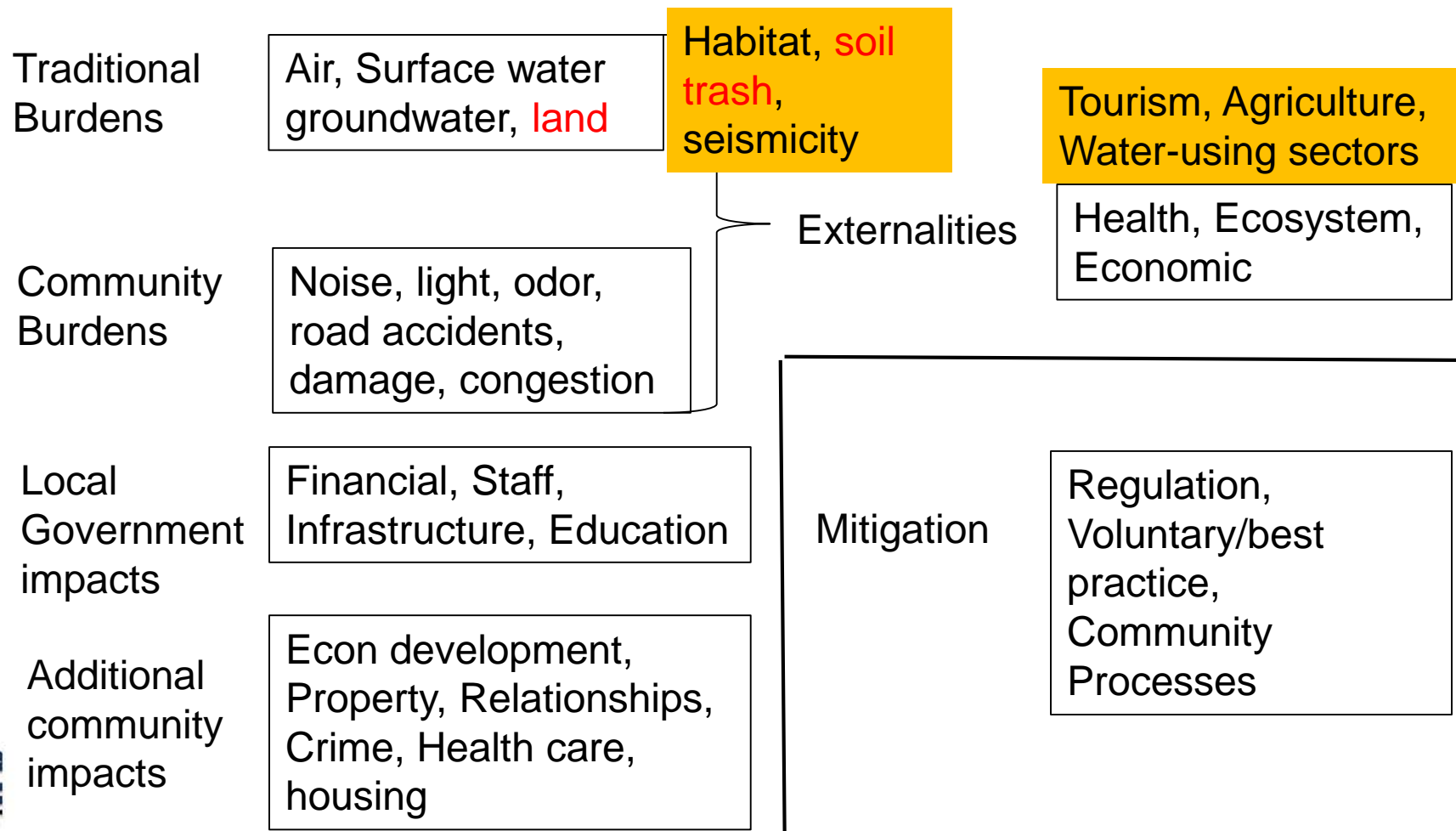
Sample State - Colorado

Dropout Rate – A short-lived spike occurred in top producing counties, but ultimately disappeared.
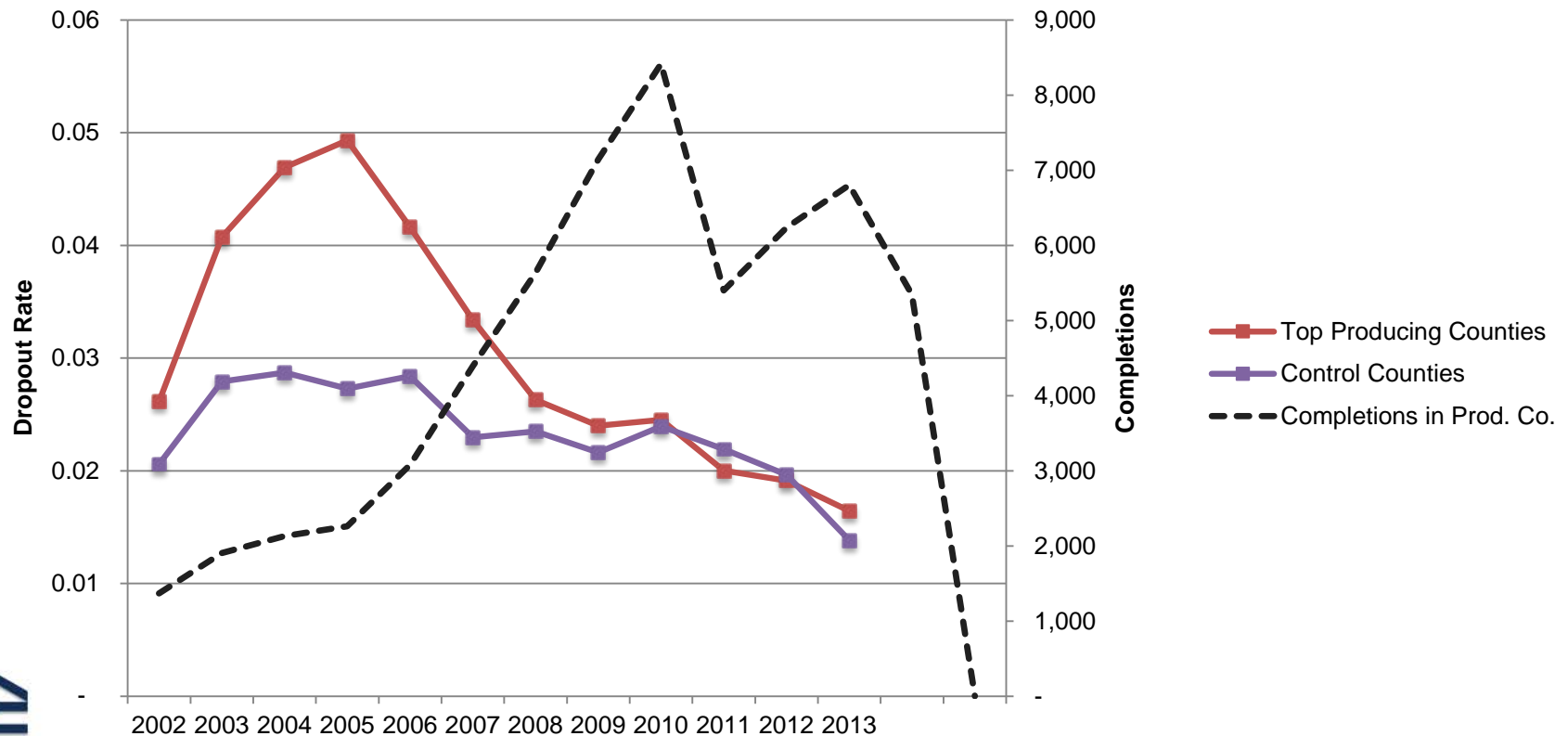
Solid Waste

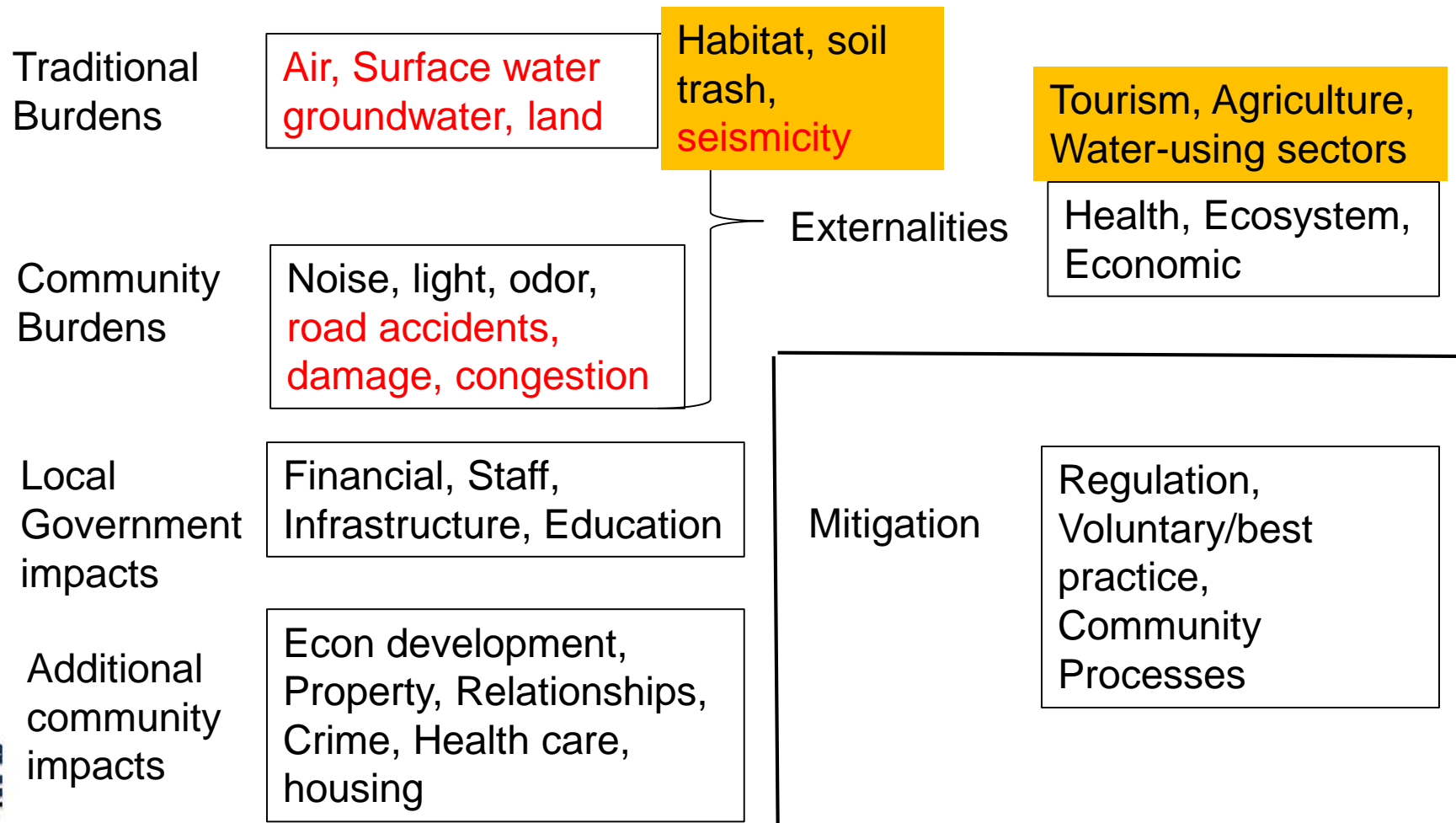SGD Stages: Initial Assessment ➔ Leasing/Permitting ➔ Exploration ➔ Development ➔ Production ➔ Plugging and Abandonment

Traditional Burdens

| Air, Surface water groundwater, land |

Habitat, soil trash, seismicity

Tourism, Agriculture, Water-using sectors

Externalities

| Health, Ecosystem, Economic |

Community Burdens

| Noise, light, odor, road accidents, damage, congestion |

Local Government impacts

| Financial, Staff, Infrastructure, Education |

Mitigation

| Regulation, Voluntary/best practice, Community Processes |

Additional community impacts

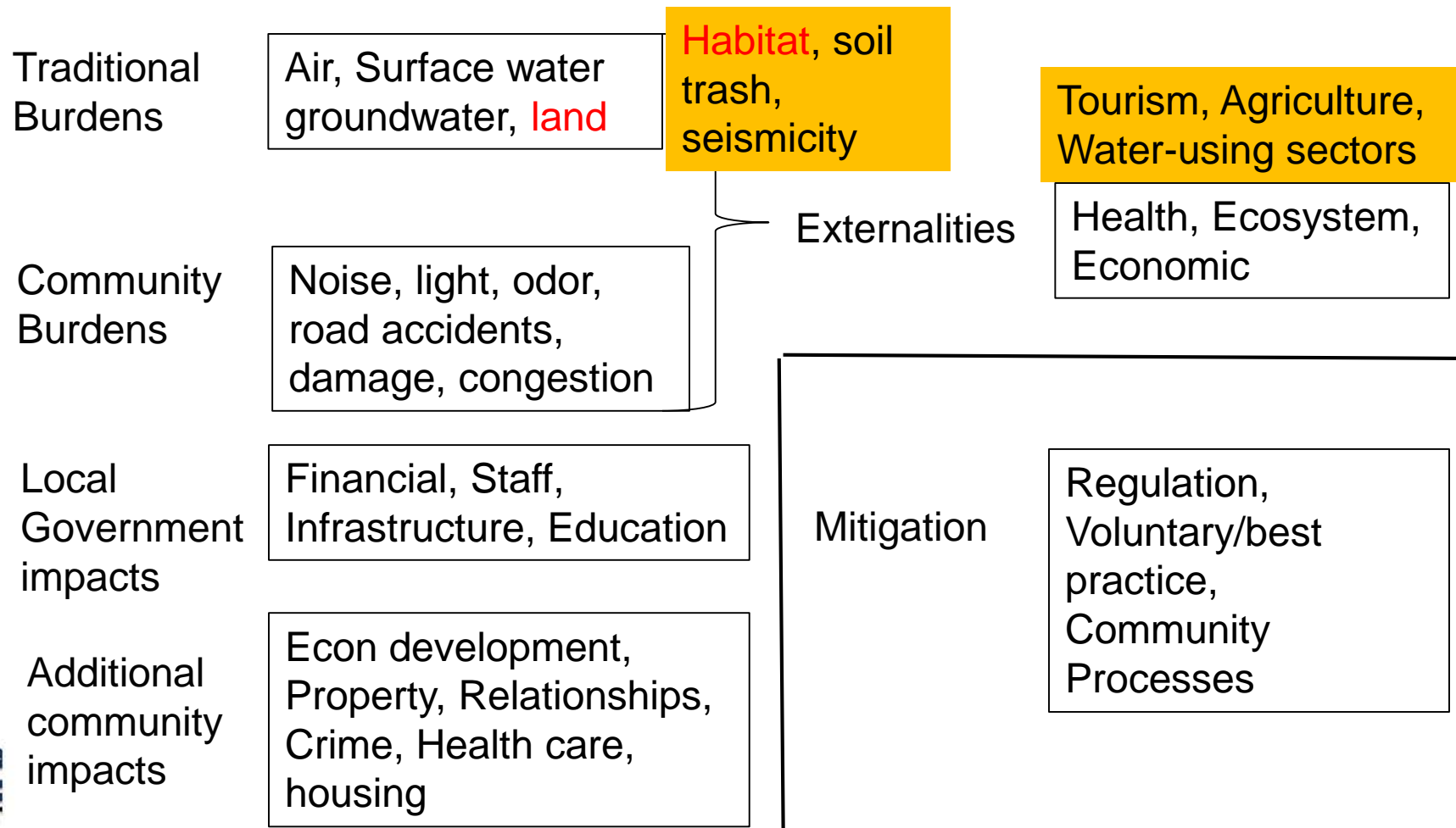| Econ development, Property, Relationships, Crime, Health care, housing |

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Wastewater Modeling

SGD Stages: Initial Assessment ➔ Leasing/Permitting ➔ Exploration ➔ Development ➔ Production ➔ Plugging and Abandonment

Traditional Burdens	Air, Surface water groundwater, land

Habitat, soil trash, seismicity

Tourism, Agriculture, Water-using sectors

Externalities

Health, Ecosystem, Economic

Community Burdens	Noise, light, odor, road accidents, damage, congestion

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Mitigation

Regulation, Voluntary/best practice, Community Processes

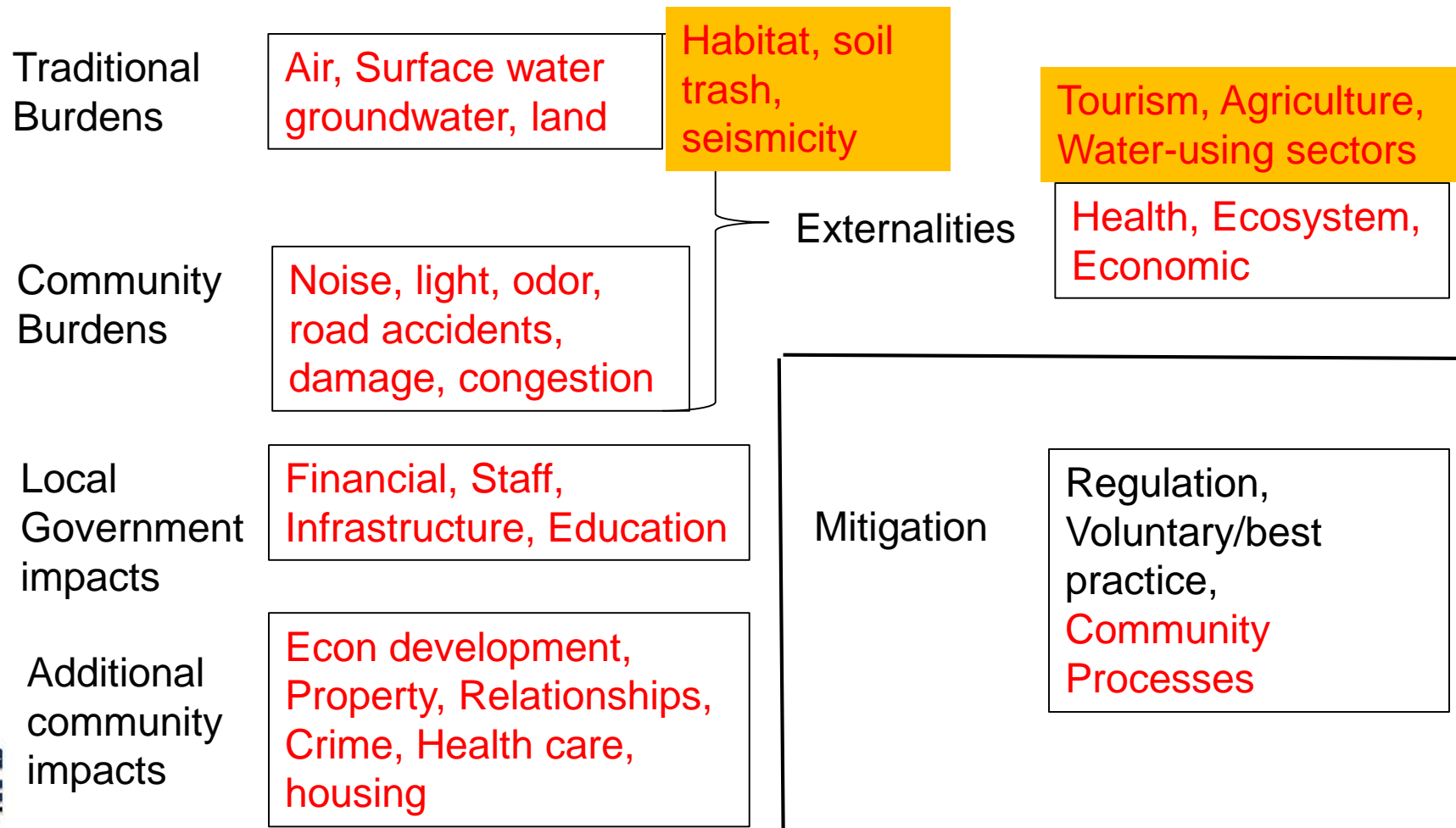|	
Additional community impacts	Econ development, Property, Relationships, Crime, Health care, housing

Siting and Habitat Modeling

SGD Stages: Initial Assessment ➜ Leasing/Permitting ➜ Exploration ➜ Development ➜ Production ➜ Plugging and Abandonment

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Tourism, Agriculture, Water-using sectors

Externalities | Health, Ecosystem, Economic

Community Burdens | Noise, light, odor, road accidents, damage, congestion

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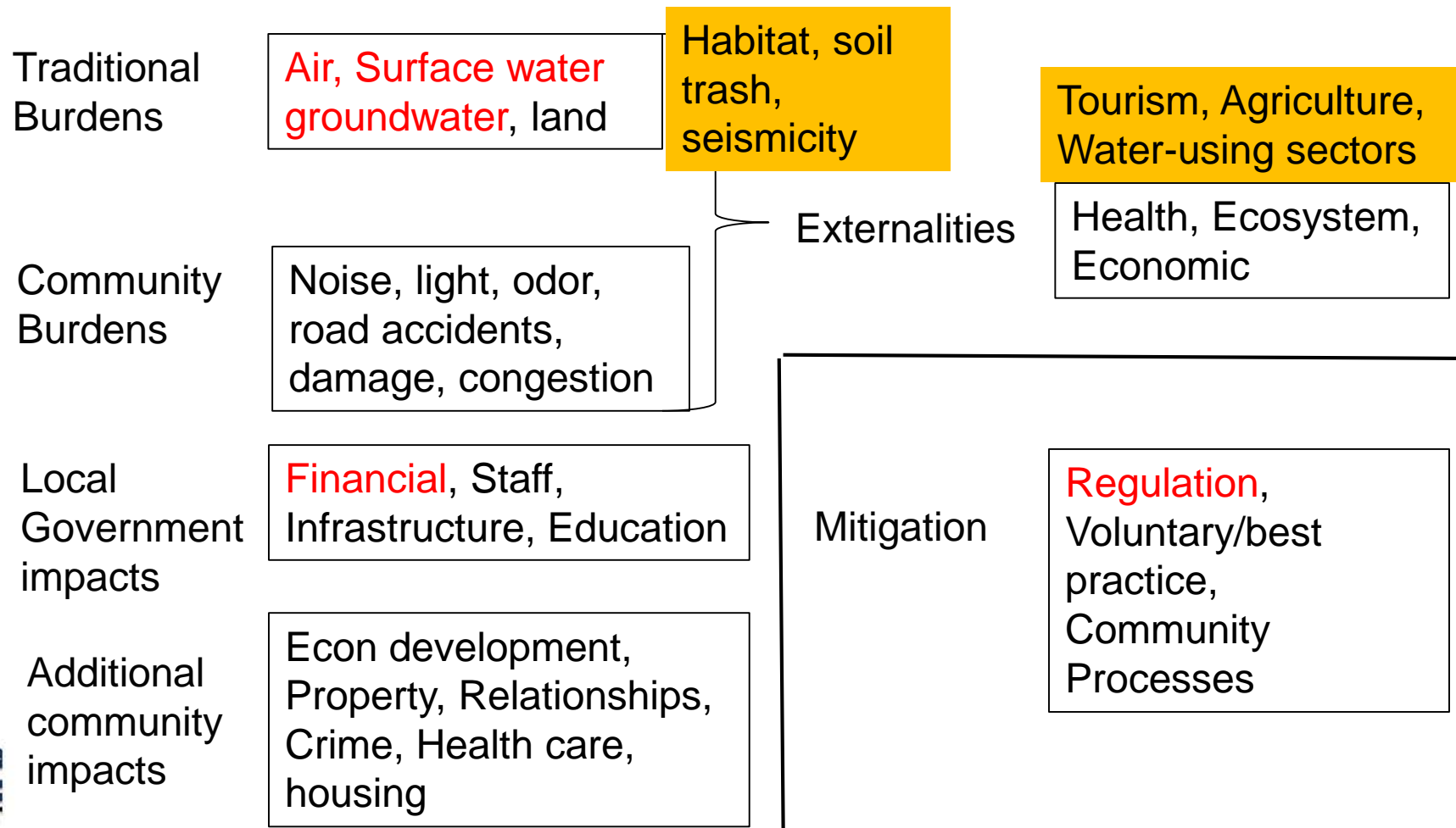
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Industry/Community protocols

SGD Stages: Initial Assessment ➜ Leasing/Permitting ➜ Exploration ➜ Development ➜ Production ➜ Plugging and Abandonment

Traditional Burdens

> Air, Surface water groundwater, land

> Habitat, soil trash, seismicity

Community Burdens

> Noise, light, odor, road accidents, damage, congestion

Externalities

> Tourism, Agriculture, Water-using sectors

> Health, Ecosystem, Economic

Local Government impacts

> Financial, Staff, Infrastructure, Education

Additional community impacts

> Econ development, Property, Relationships, Crime, Health care, housing

Mitigation

> Regulation, Voluntary/best practice, Community Processes

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Inactive Wells Report

SGD Stages: Initial Assessment ➜ Leasing/Permitting ➜ Exploration ➜ Development ➜ Production ➜ Plugging and Abandonment

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Local Government impacts	Financial, Staff, Infrastructure, Education		Mitigation	Regulation, Voluntary/best practice, Community Processes
Additional community impacts	Econ development, Property, Relationships, Crime, Health care, housing			

Thank you

For further questions:
Krupnick@rff.org

Shale Schools Overview

Geography: Colorado, Montana, North Dakota, Ohio, Pennsylvania, and West Virginia

Primary metrics: Student population, student/ teacher ratio, finances, dropout rate, and test scores

Methodology: Difference in difference complimented by in person interviews

Sample State - Colorado

Instructional Expenditures - Despite an oil and gas boom, top producing counties lag control counties and have experienced a net decline since 2000.
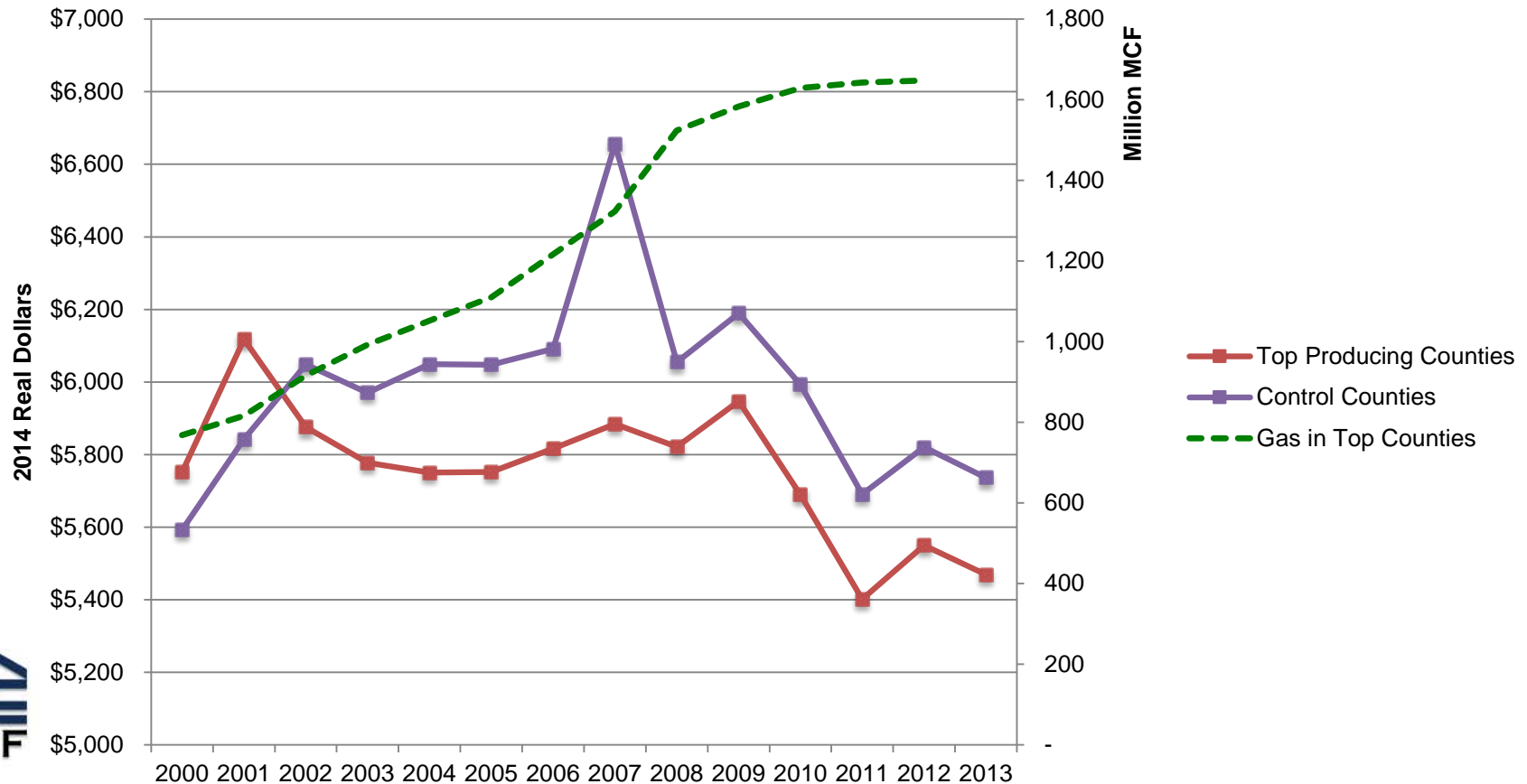
Sample State - Colorado

<u>Property Taxes</u> – Property tax revenue to schools in top producing counties experienced greater year over year fluctuation.
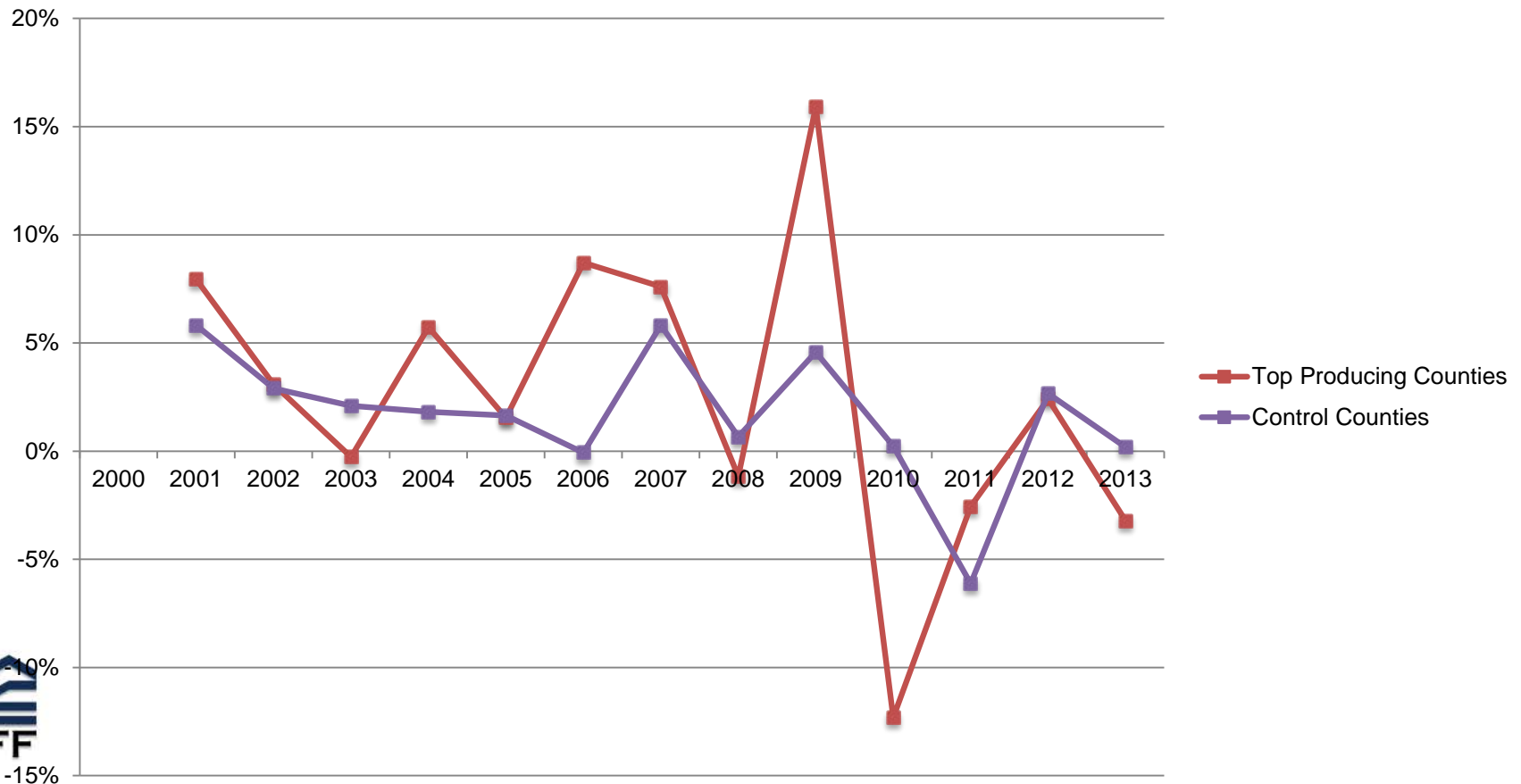
Primary Takeaways from Bakken (ND & MT)

Boom presented challenges related to student growth (primarily in elementary grades), student mobility (extremely high turnover / recycling), student preparation and new teacher hiring and retention. Few dropouts were reported.

Financial health, particularly for new capital projects, relied on voter approval, which varied greatly by district. Interviewees frequently cited frustration with state funding mechanism (East / West divide).

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Risk/Benefit Matrix and Modeling

SGD Stages: Initial Assessment ➔ Leasing/Permitting ➔ Exploration ➔ Development ➔ Production ➔ Plugging and Abandonment

Traditional Burdens	Air, Surface water groundwater, land	Habitat, soil trash, seismicity	Tourism, Agriculture, Water-using sectors
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