Shifts in the Energy Industry: An Analysis of Energy Impacts on State Economies

Regional Economic Models, Inc.

Zachary Schofield, Associate I
Ian Spellane, Analyst

what does REMI say?[sm]

Agenda

- Introduction
- Economic Background
- Model Introduction and Demo
- Notable Results
- Conclusions
- Q&A

About Us

We are the nation's leader in dynamic local, state and national policy modeling.

From the start, REMI has sought to improve public policy through economic modeling software that informs policies impacting our day-to-day lives.

We were founded in 1980 on a transformative idea: government decision-makers should test the economic effects of their policies before they're implemented.

At REMI, we're inspired by a single goal: *improving public policies*.

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Our models are built for any state, county, or combination of counties in the United States.

Our Representative Clients

Our model users and consulting clients use REMI software solutions to perform rigorous economic analysis that critically influences policy.

UCONN UNIVERSITY OF CONNECTICUT

Sandia National Laboratories

AARP

McKinsey & Company

North Carolina Department of Commerce

European Commission

University of Michigan

EY

ITEP Institute on Taxation and Economic Policy

nea National Education Association

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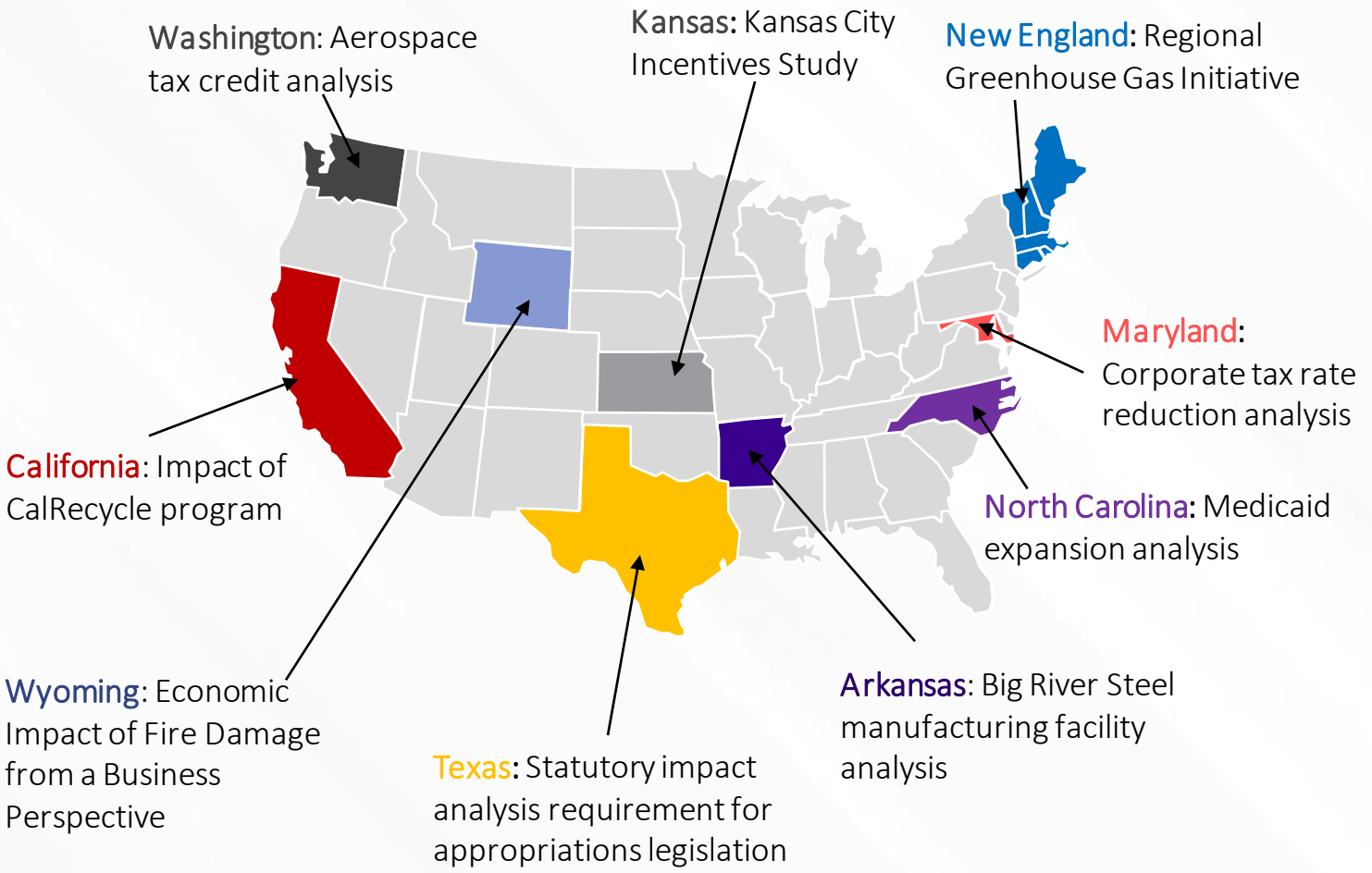
The REMI Model: Our Approach & Applications

Our Approach

You need a ***software solution*** that can clarify, calculate and communicate a ***quantitative narrative*** to policy makers and the general public about policies for your economy.

Rigorous Economic Analysis

- Since 1980
- Peer Reviewed
- Multiple Reputable Data Sources
- Public Equations



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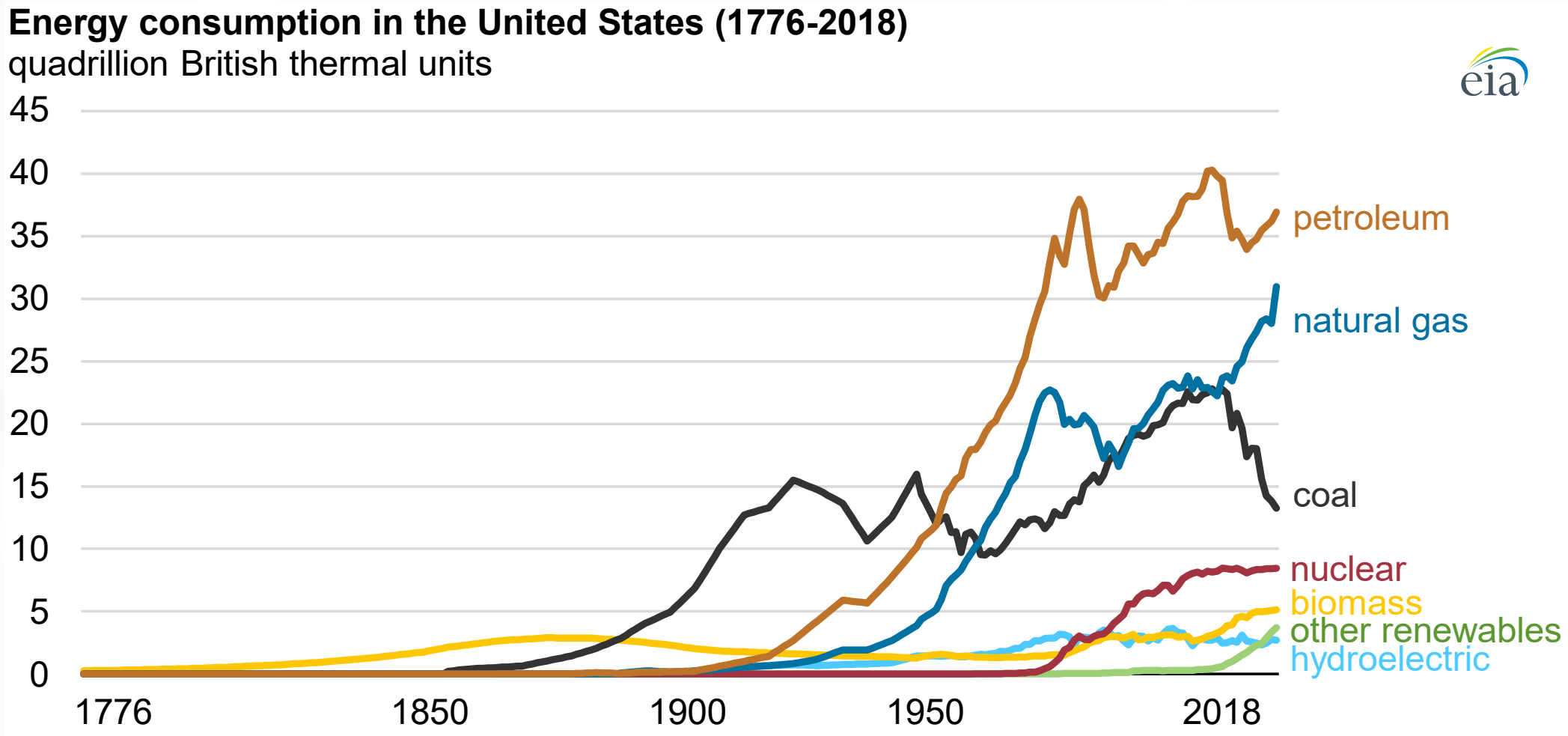
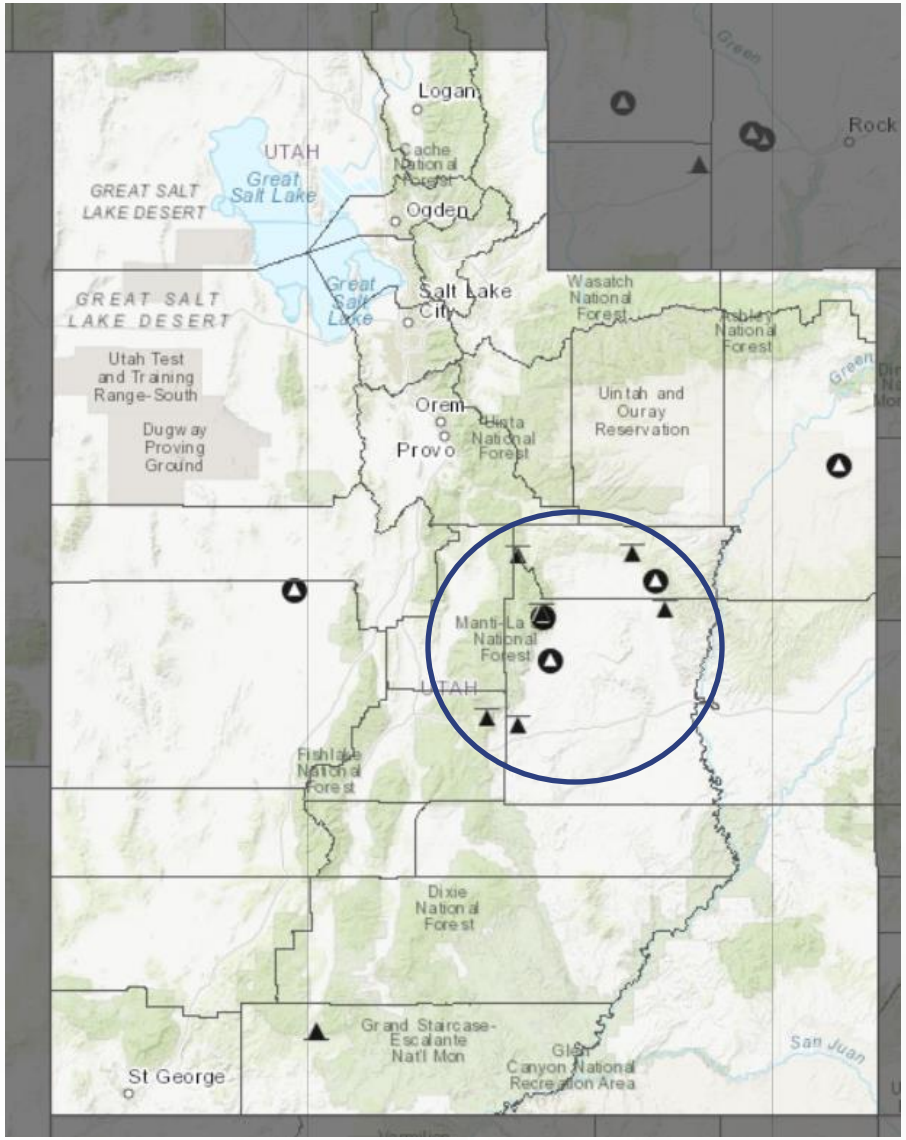
The Energy Economy in the United States is Changing



Utah's Coal Industry

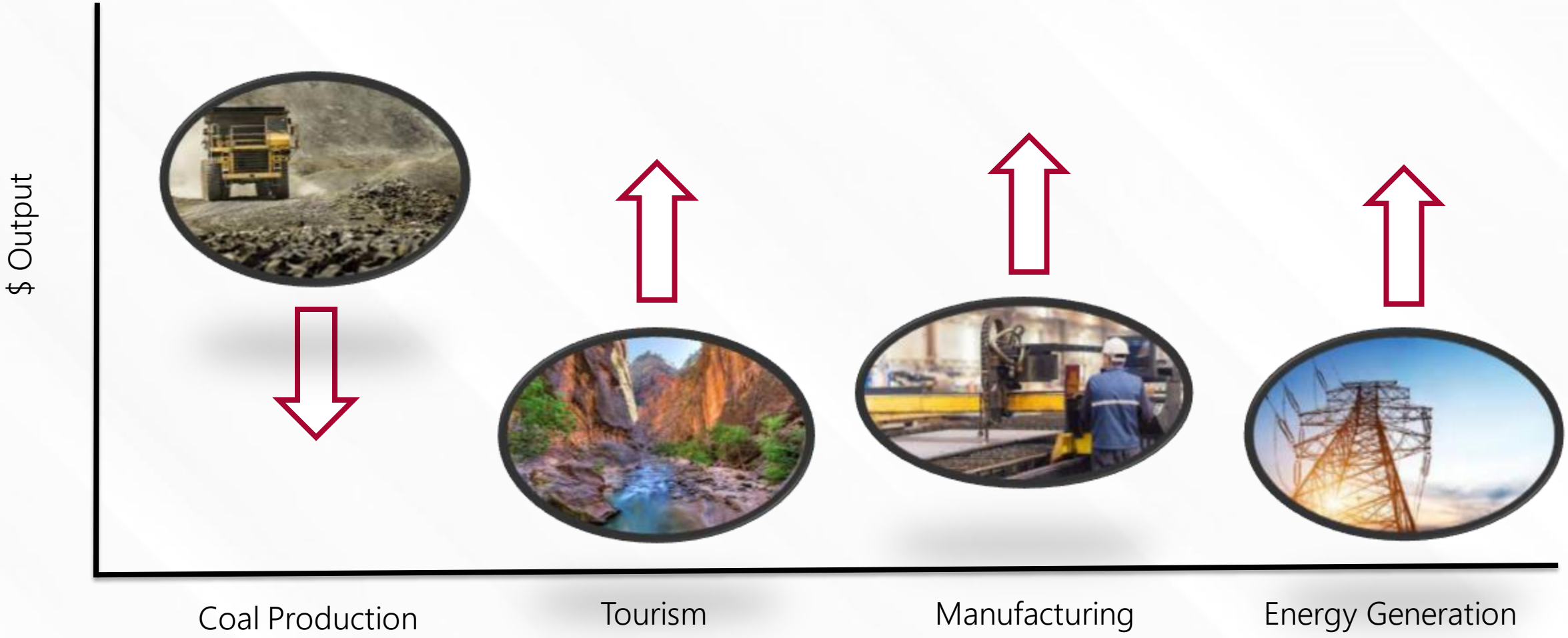


Utah	2017-2020 Average
Production in Thousand Short Tons	13.9 Million
Percent of Nation	2.3%
Dollar Value of Coal Mining Industry	$502.6 Million

- Coal Mining in Utah is concentrated in three counties: Carbon, Emery and Sevier
- Coal Production Statewide down 31.1% from 2010-2020

A Thought Experiment

If Coal Mining Output is reduced to 0, what industries could fill the vacuum?



Possible Transition Job Sources

Tourism

- $10 Billion industry statewide in 2019
- Concentrated near National Parks and Ski Areas
- $210 Million industry in Uintah Basin coal counties

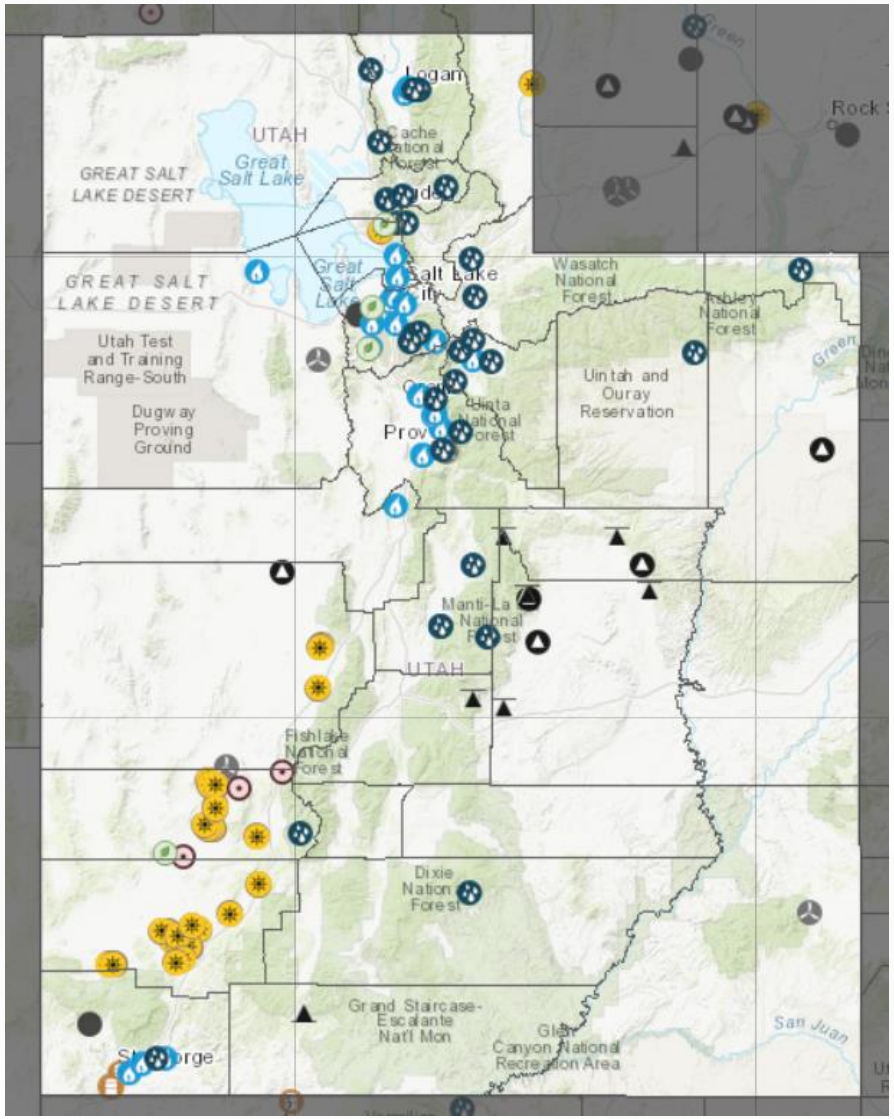
Manufacturing

- $19.6 Billion industry statewide in 2018
- Top 5 Sectors Include:
  - Fabricated Metal Production
  - Computer and Electronic products
  - Food, Beverage and Tobacco
  - Chemical
  - Miscellaneous
- $216.2 Million industry in Uintah Basin Coal Counties

Electricity Generation

- Utilize existing coal power plant infrastructure near coal mines
- $547.7 Million industry statewide
- Potential for expansion into other forms of power generations

Energy Assets in Utah



- Utah has coal, solar, natural gas, and hydropower facilities
- Existing energy infrastructure to facilitate and human capital to facilitate transition

Analysis Goals

Questions We Answer Today	Questions We Don't Answer Today
• How many jobs will be lost if the Coal Industry disappears?	• What policies will entice tourists to come to a certain location?
• What level of output in other industries is required to replace those jobs?	• What will convince manufacturers to locate plants in depressed locations?
• What is the average compensation in those candidate industries?	• How large must tax breaks or other incentives be to cause businesses to relocate?

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Initial Scenario: Loss of Coal Production

Detailed Industry Sales

- Coal Mining Sector
- Regions: Carbon, Emery, and Sevier Counties
- Reduced by $503 Million, spread proportionally by aggregate output in each county

Model Simulation 2: Compensating Industries

Tourism Spending

- Increased by $260 Million spread across the three coal counties by output
- Three county region tourism industry estimated at $210 Million in 2018
- Appx. 2.6% of statewide tourism industry

Manufacturing Industry Sales

- $350 Million spread across three coal counties by output
- Three county Manufacturing GDP estimated at $216.2 Million in 2018

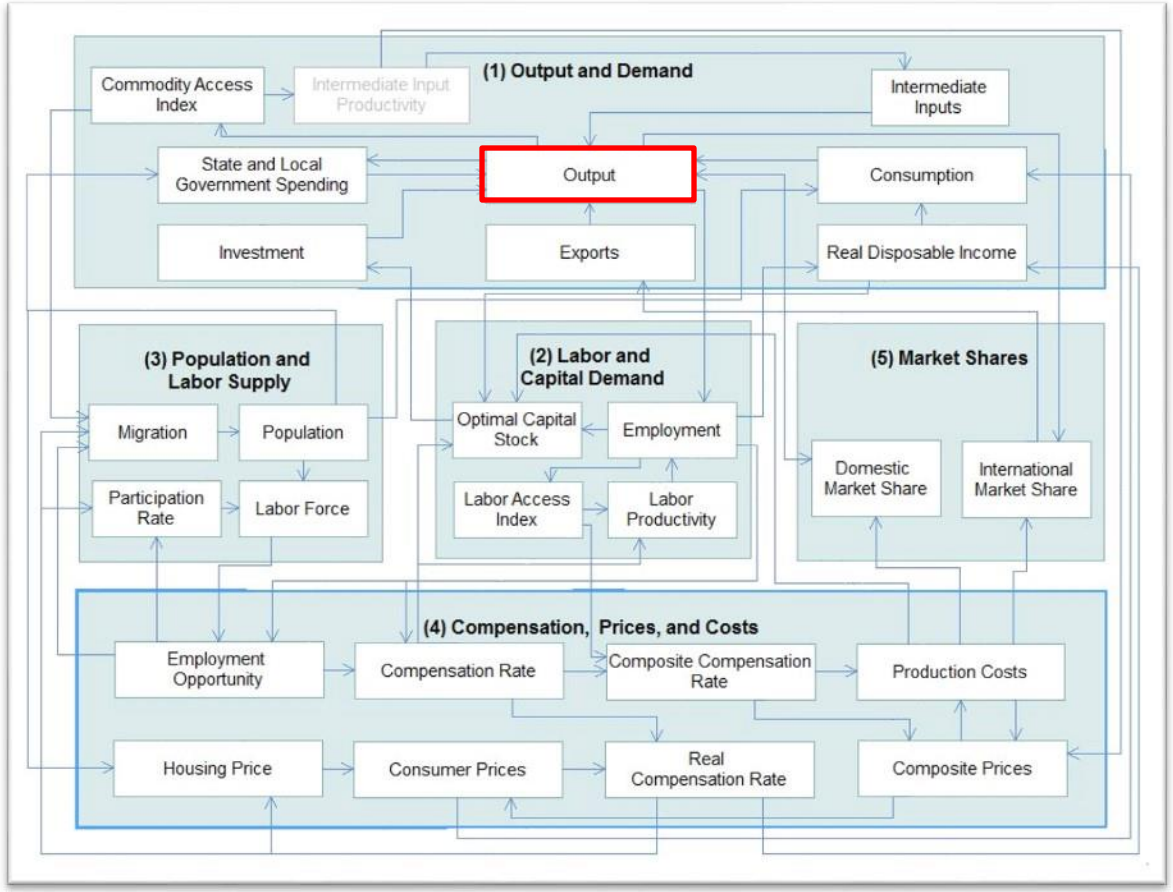
Utilities Industry Sales

- Simulates construction of an energy generating facility in the region
- $60 Million spread across three coal counties by output

Model Simulation: REMI E3+

E3+ is the premier software solution for analyzing the macroeconomic and demographic impacts of any initiatives related to the energy and environmental sectors.

Decision-makers depend on E3+ to provide comprehensive evaluations of the total economic impact of altering electric rates, introducing new power sources, investing in the production of energy, and other policy changes.



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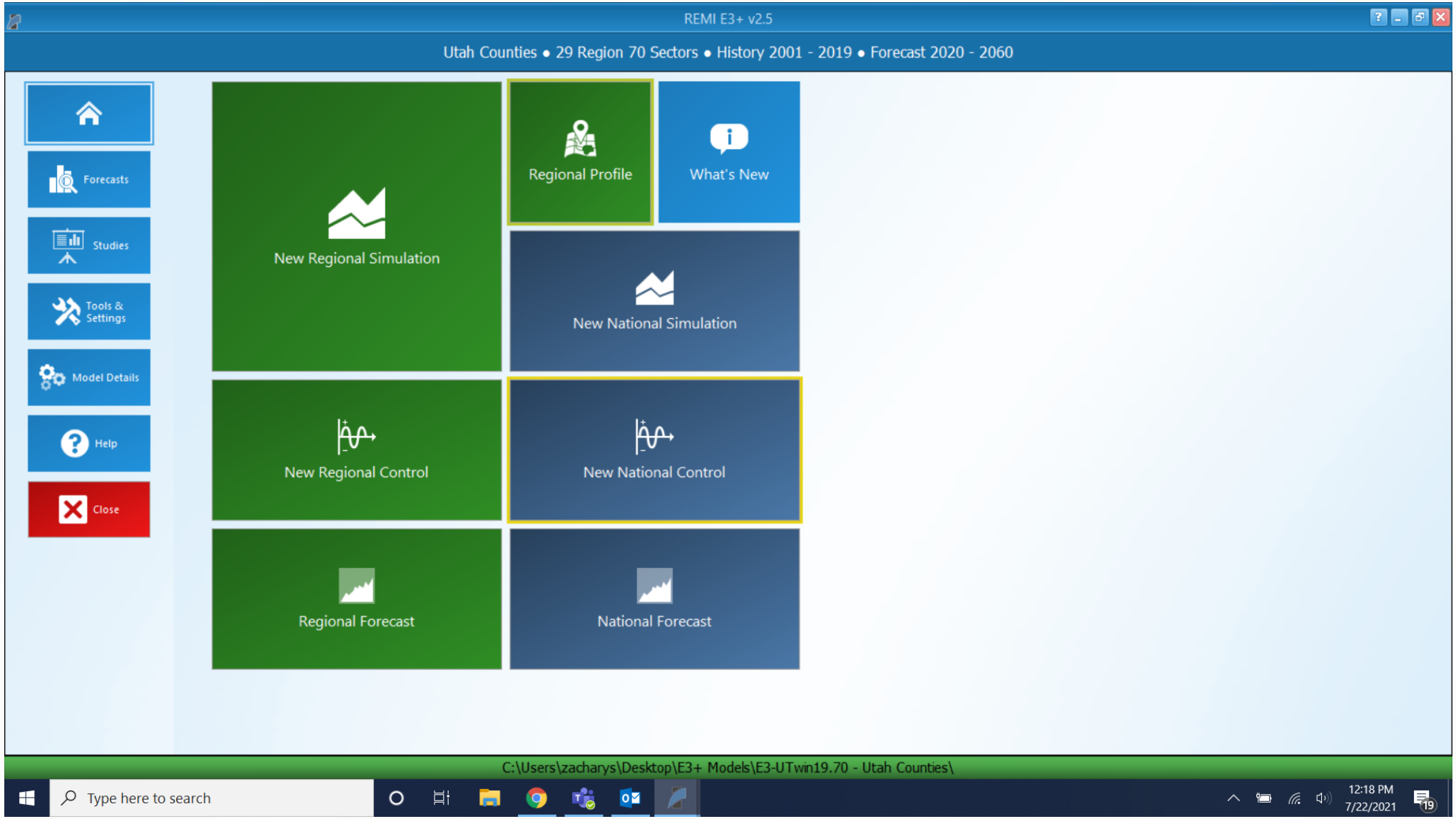
Model Demonstration



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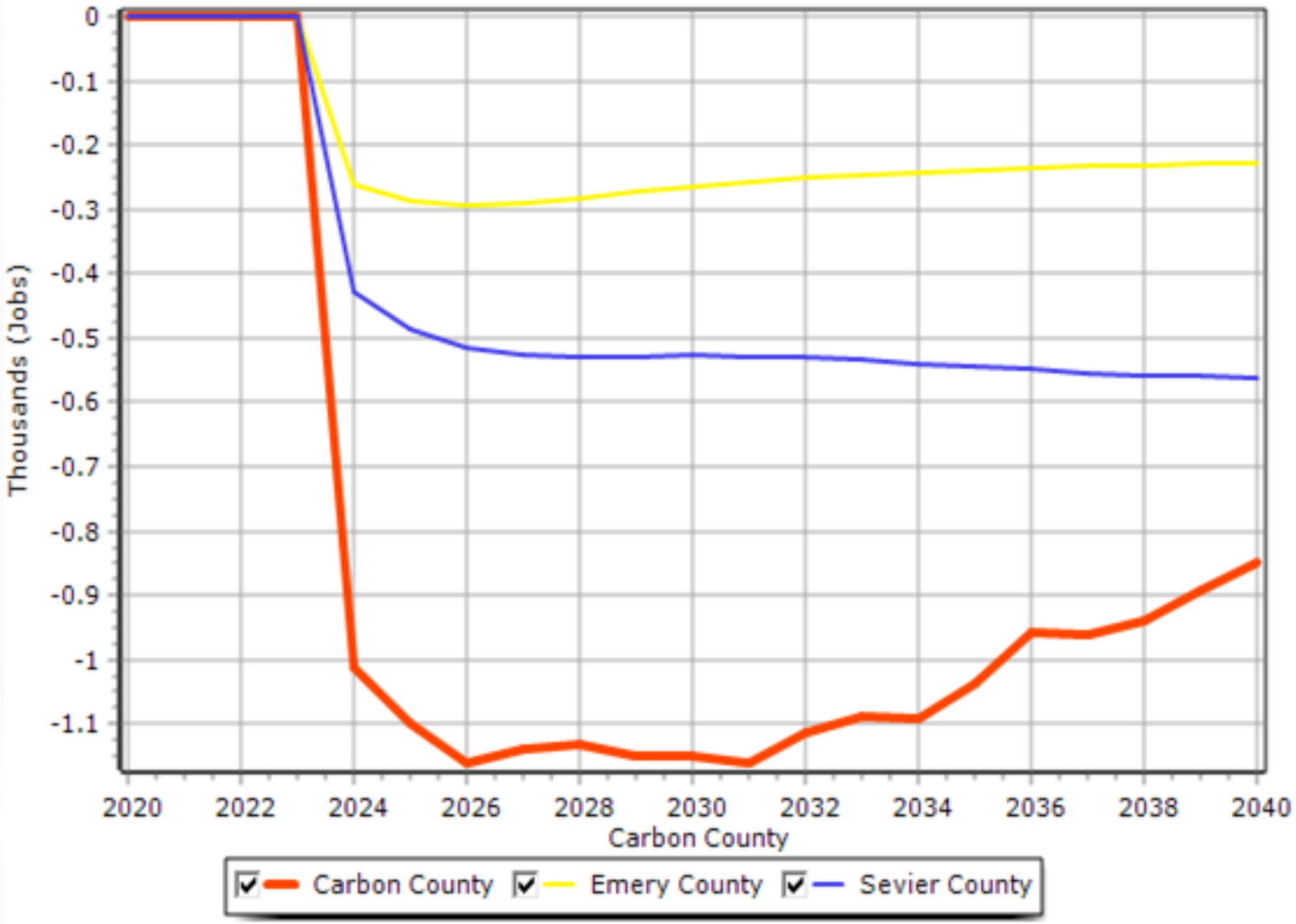
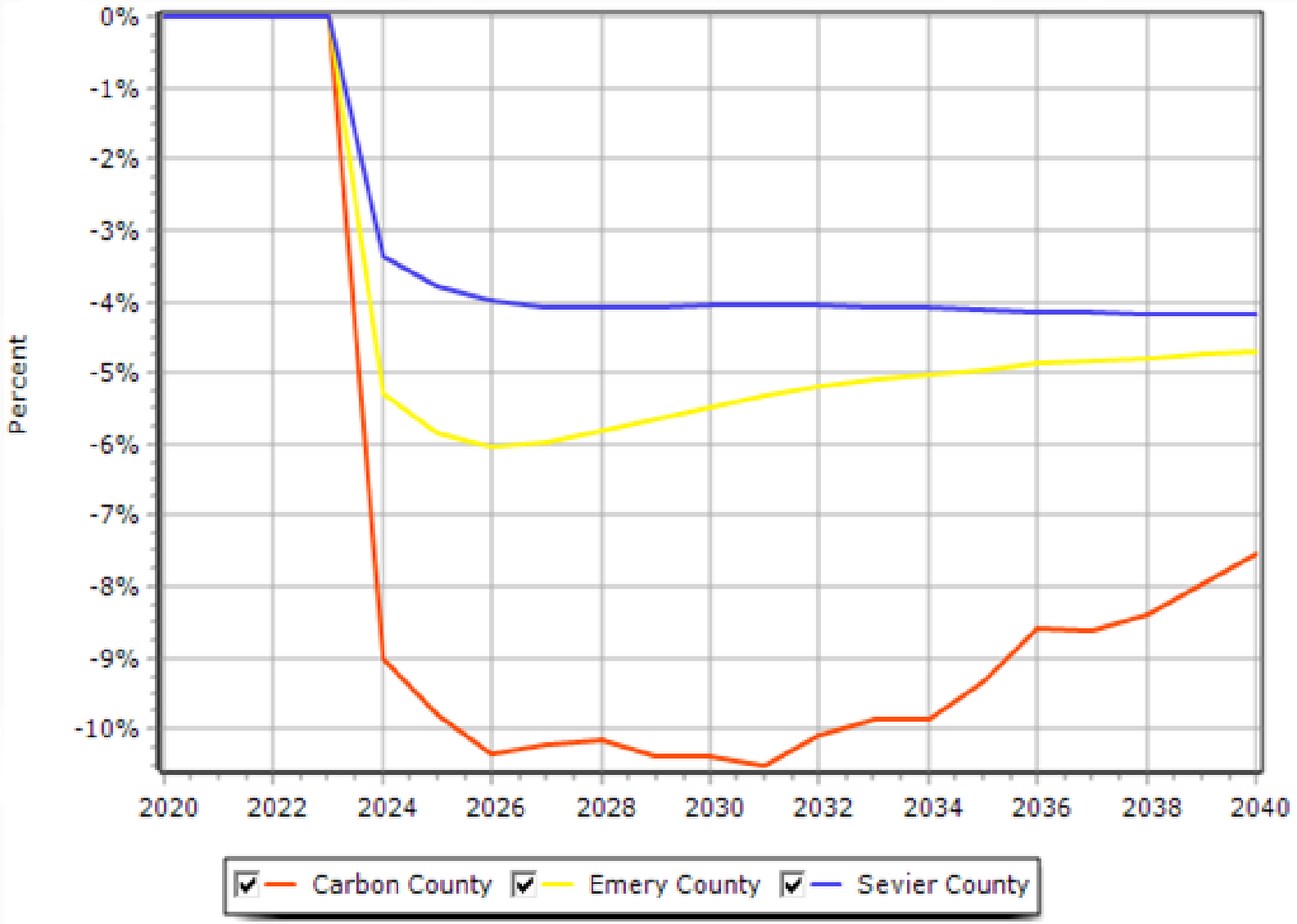
Employment Losses By Region



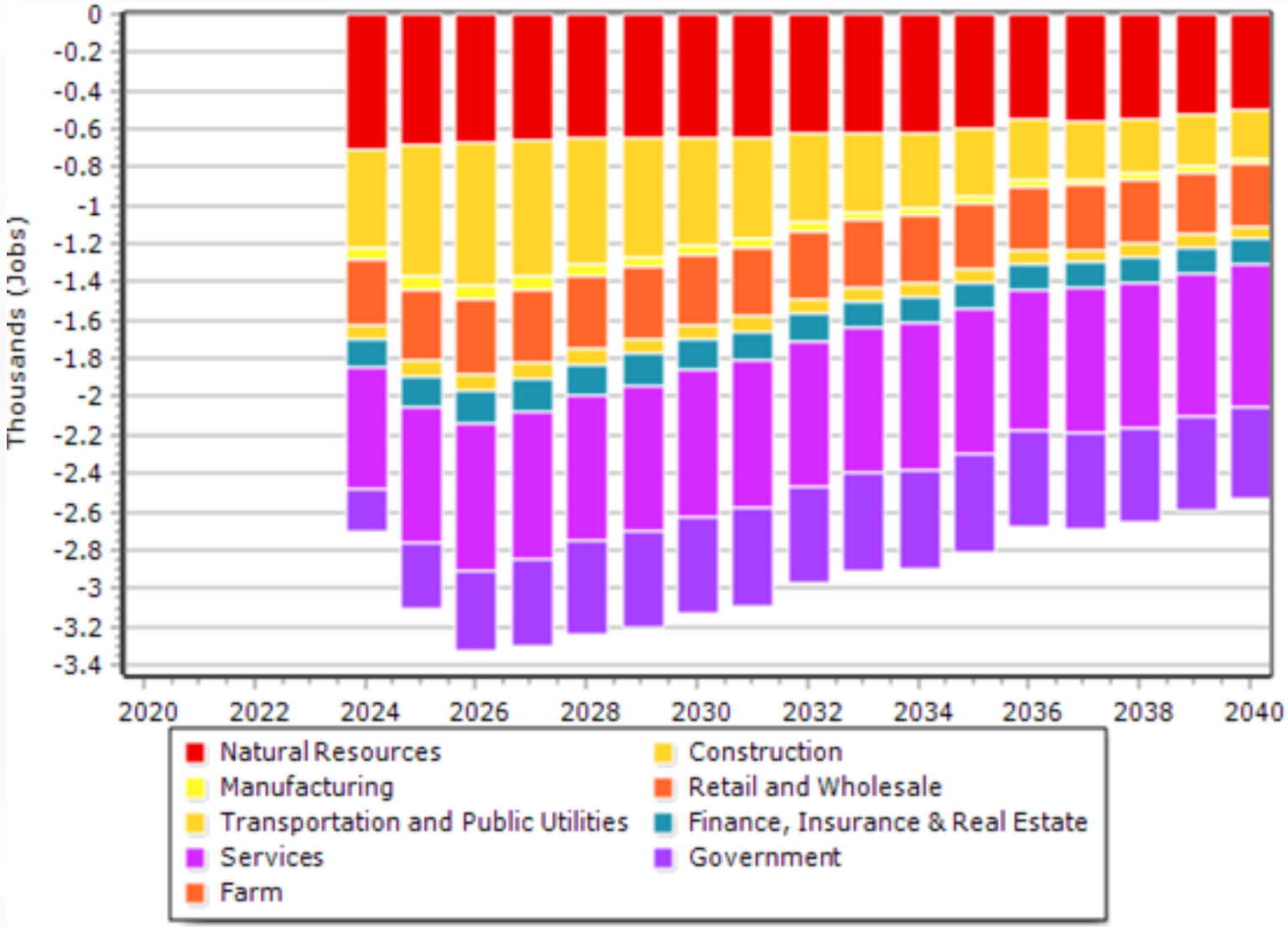
- Appx. 1900 Jobs lost in Coal Counties
- 1,100 Lost in Carbon County

Employment Losses By Region



- Over 10% of employment in Carbon County is lost

Employment Losses By Industry



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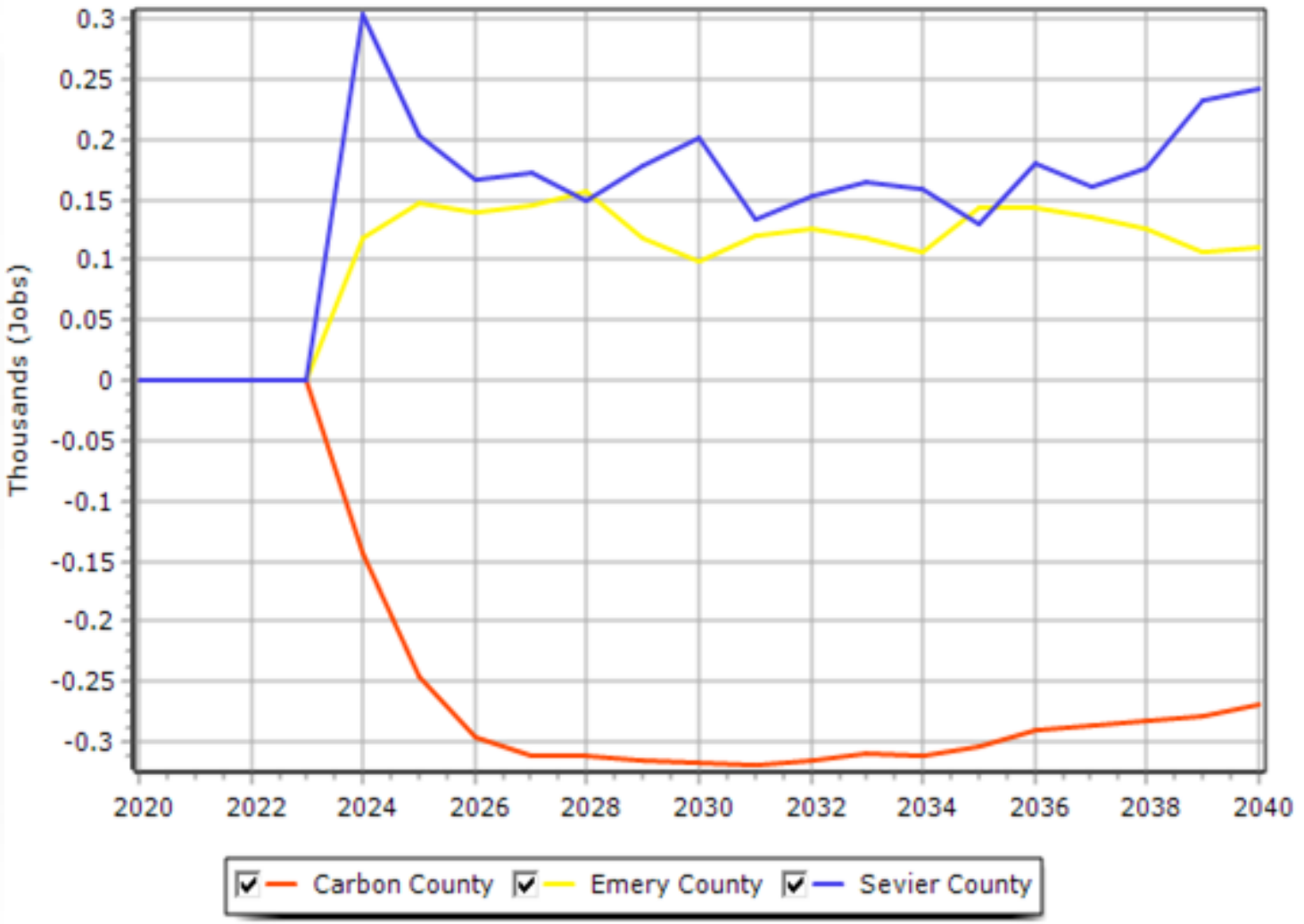
Tourism Scenario: Employment



- Roughly net zero job loss
- Geographic inequalities remain

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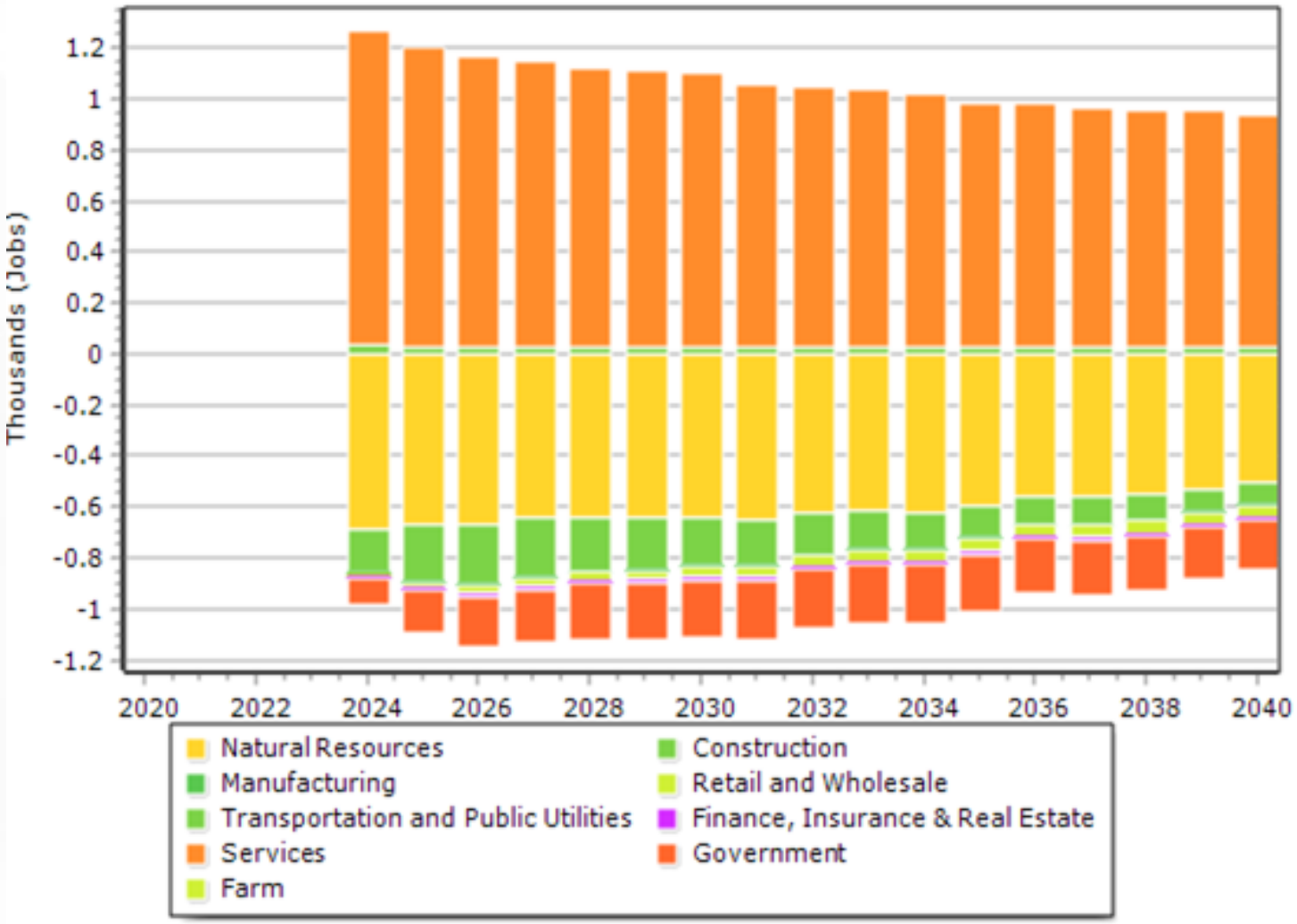
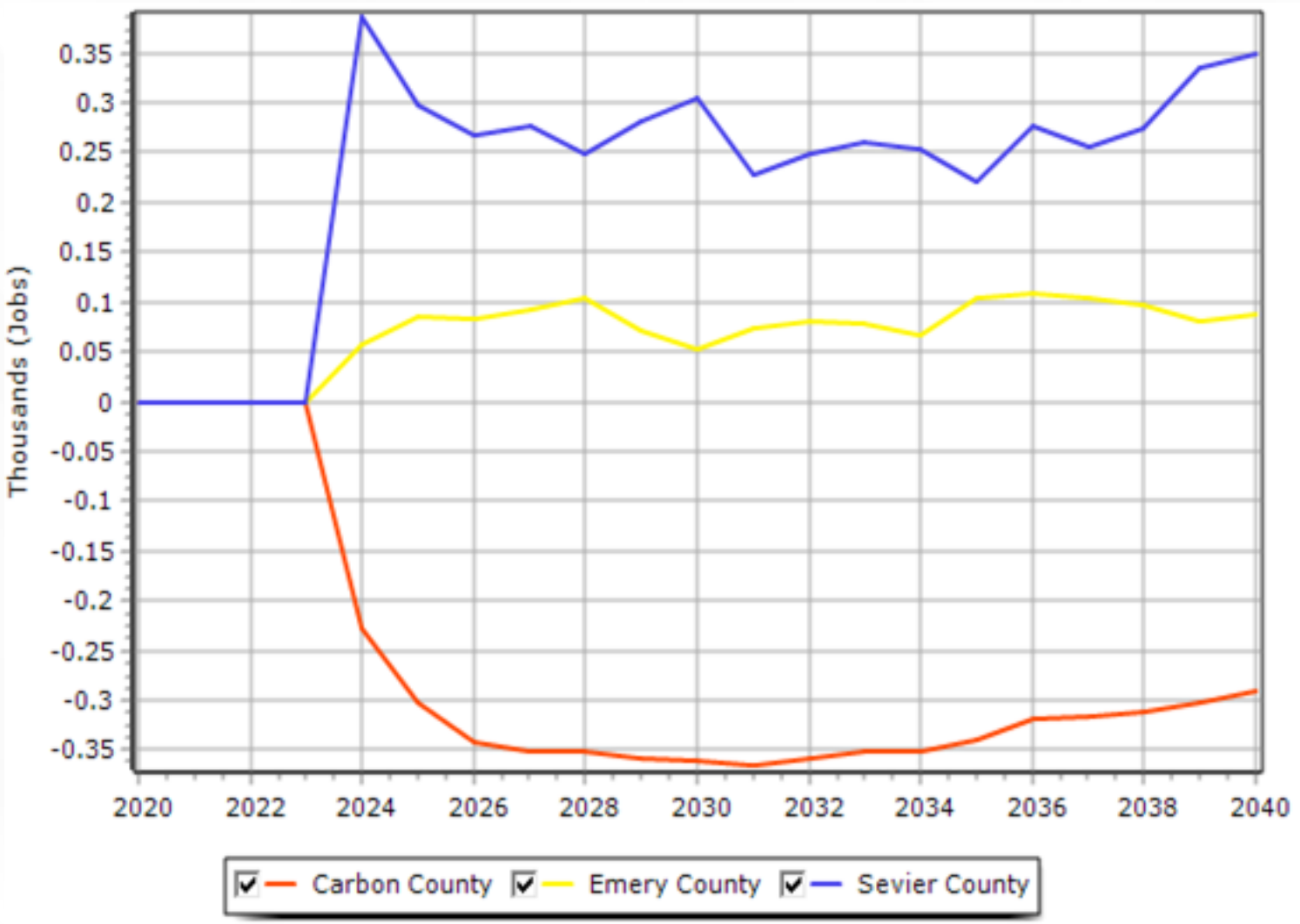
Tourism Scenario: Employment



- Employment gains in services sector
- Little spill over into other industries

Manufacturing Scenario: Employment



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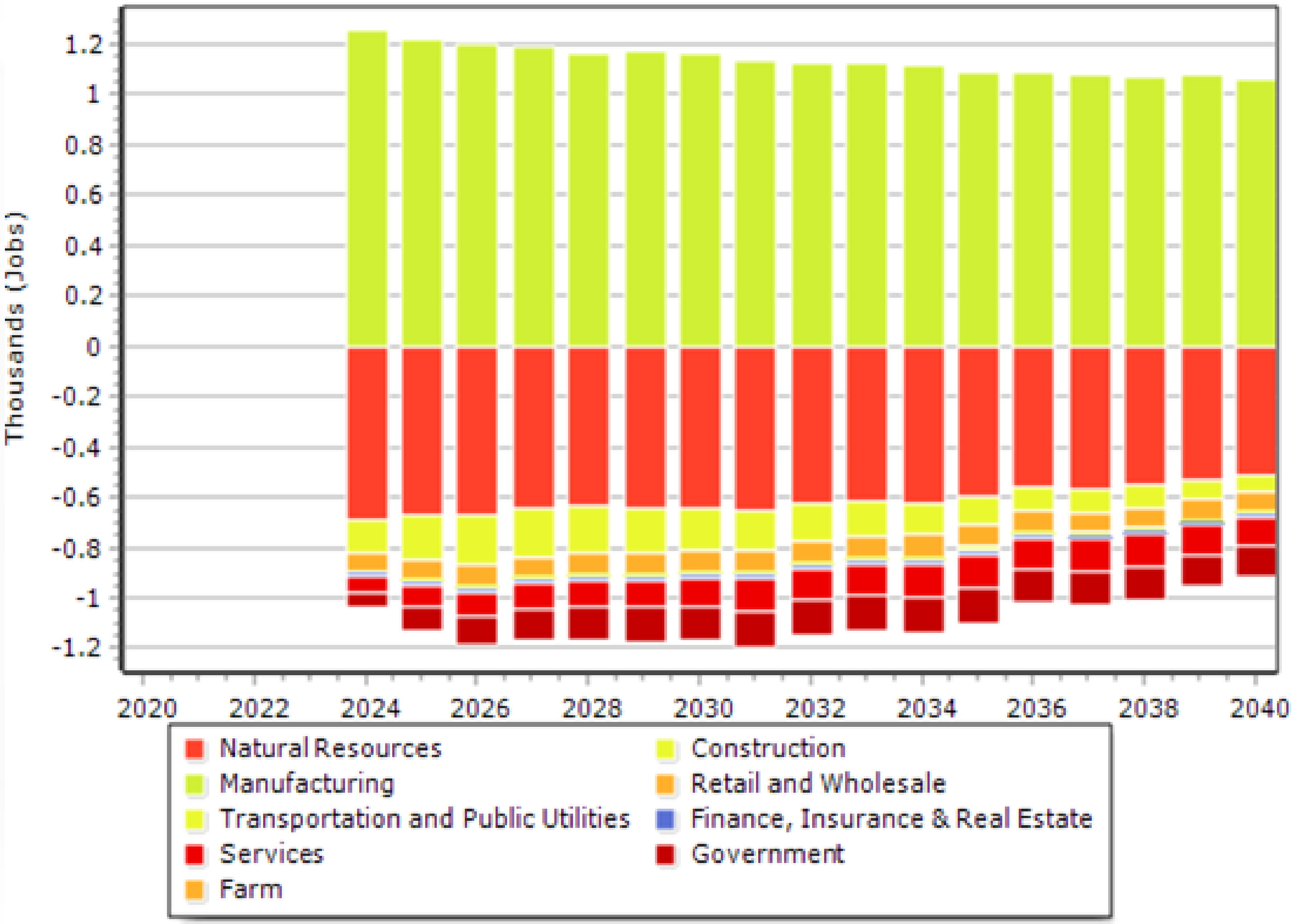
Manufacturing Scenario: Employment



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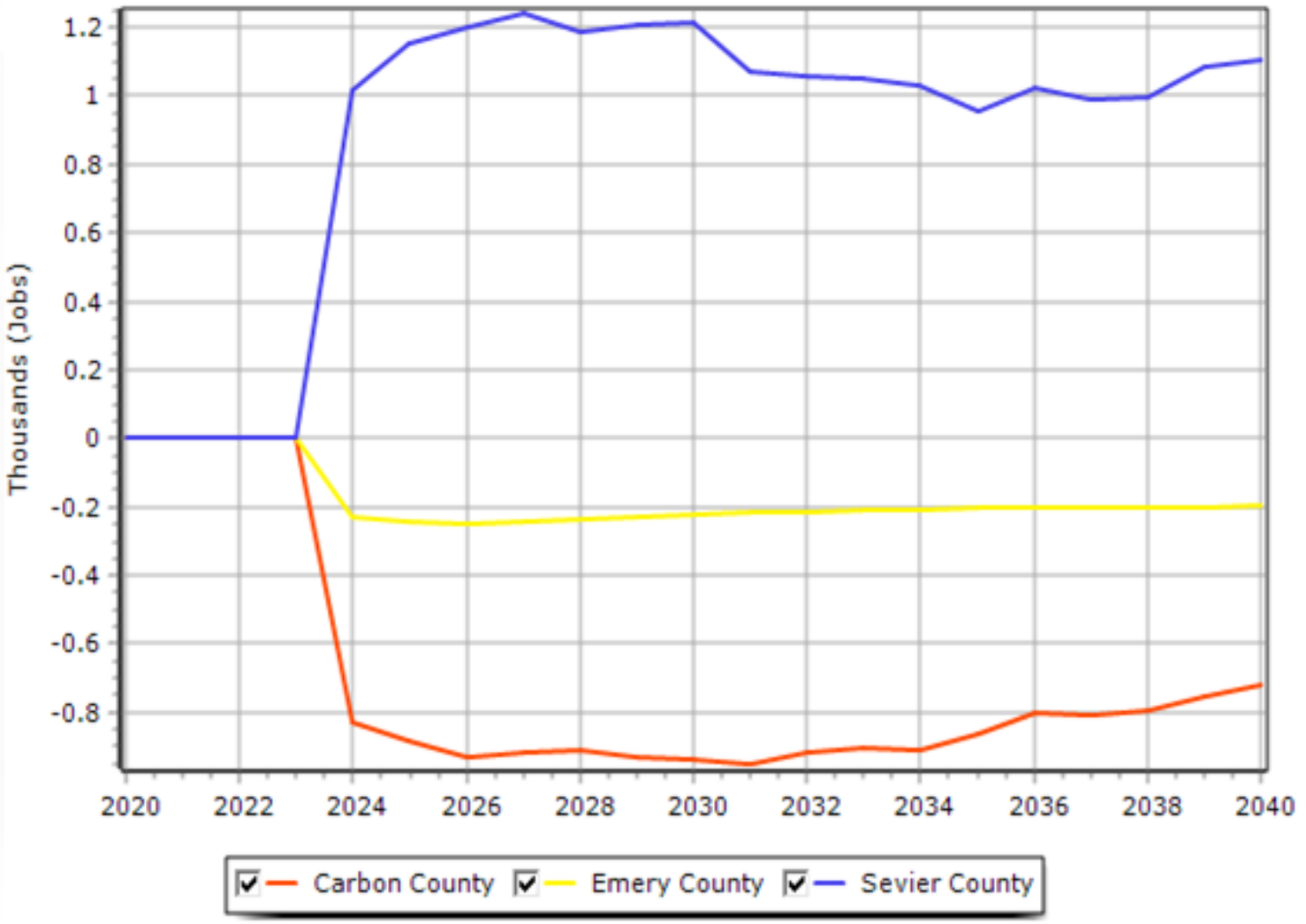
Electricity Generation Scenario: Employment



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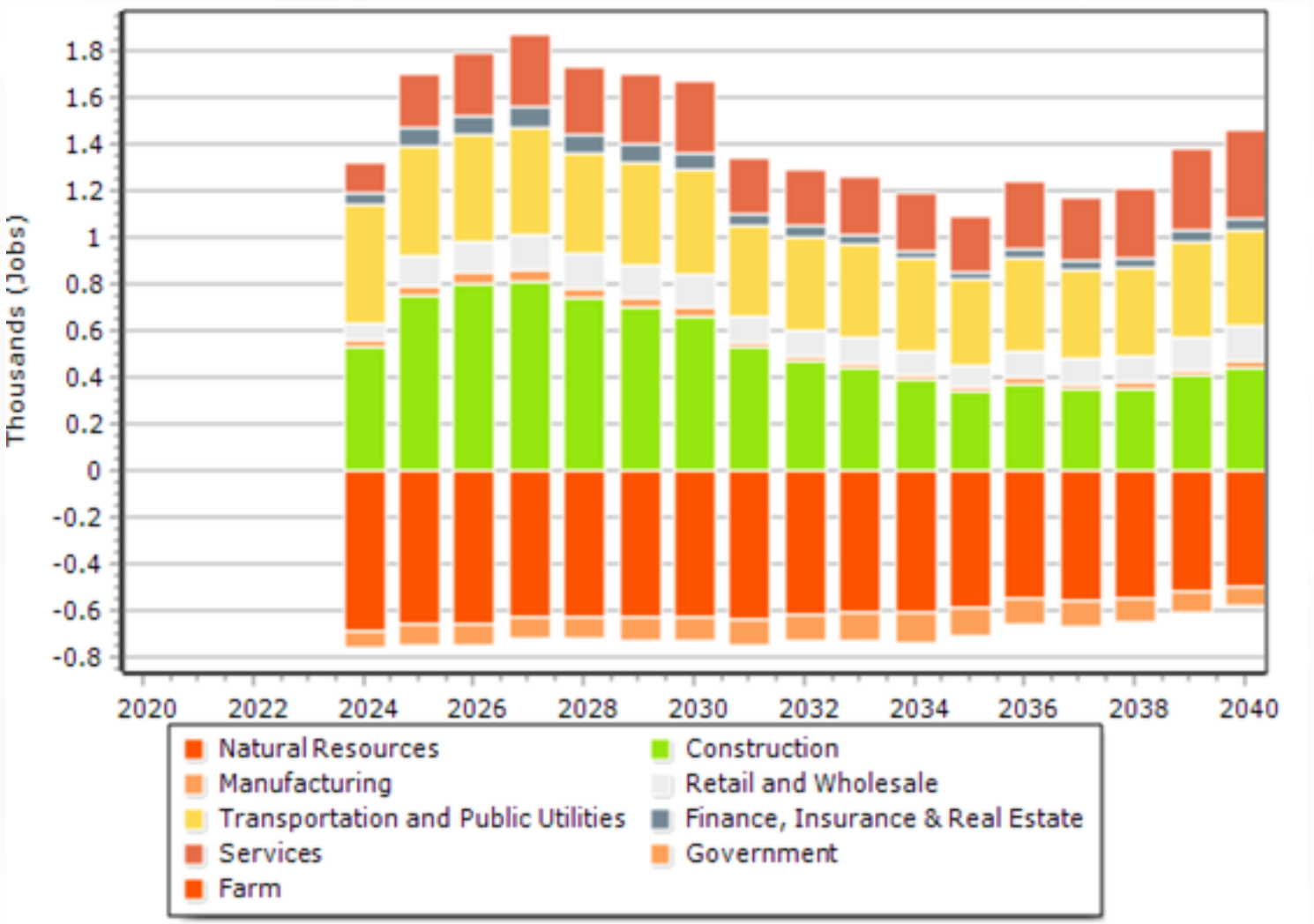
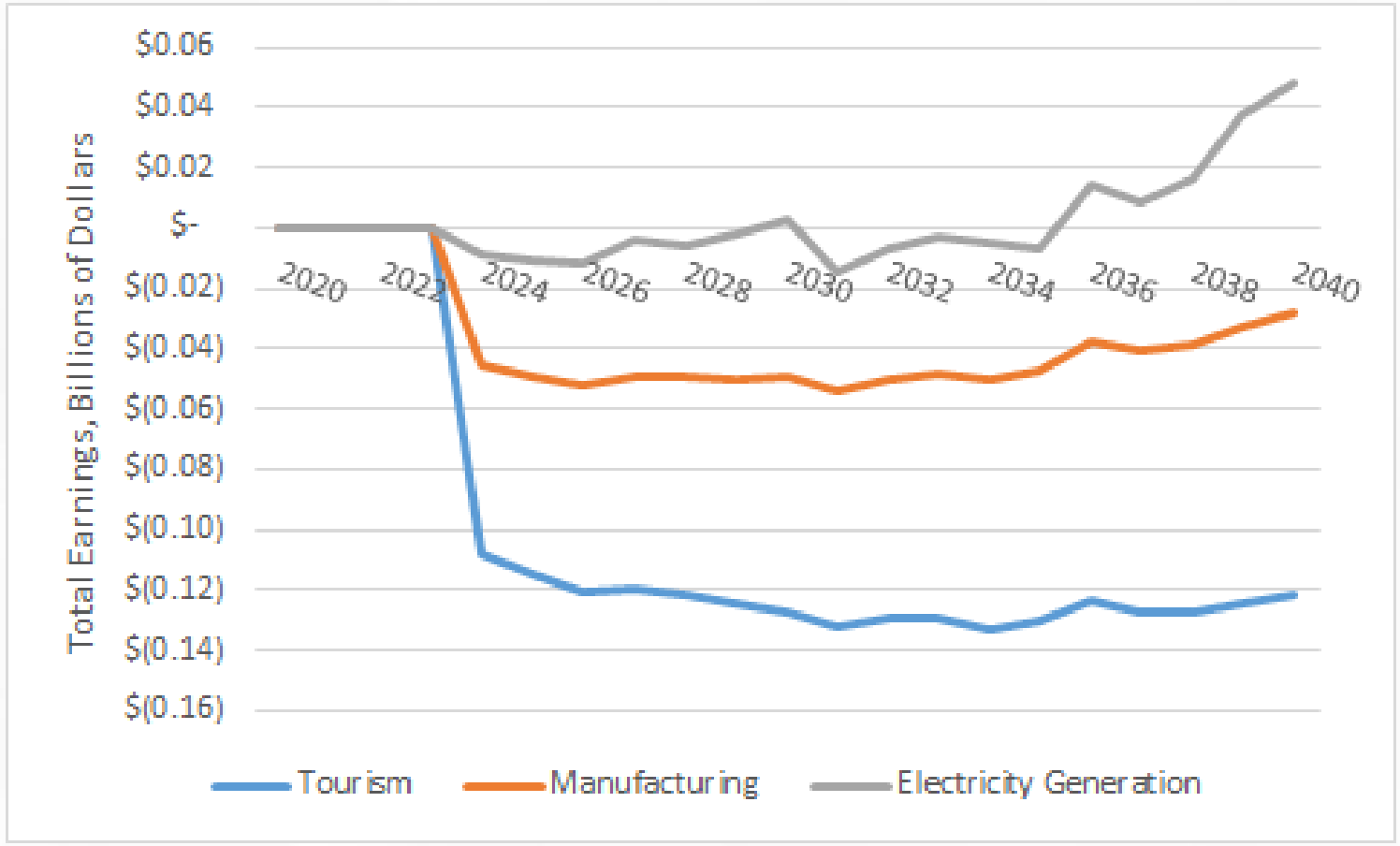
Electricity Generation Scenario: Employment



Compensation Change from Baseline: Coal Counties Combined



- Electricity Generation more or less restores wage earnings from loss of coal industry
- Tourism industry restores employment, but not wages

Model Simulation 3: All Industries Combined Simultaneously

Tourism Spending by Non Residents

- Increased by $70 Million (opposed to $260 Million)
- Three county region tourism industry estimated at $210 Million in 2018

Manufacturing Industry Sales

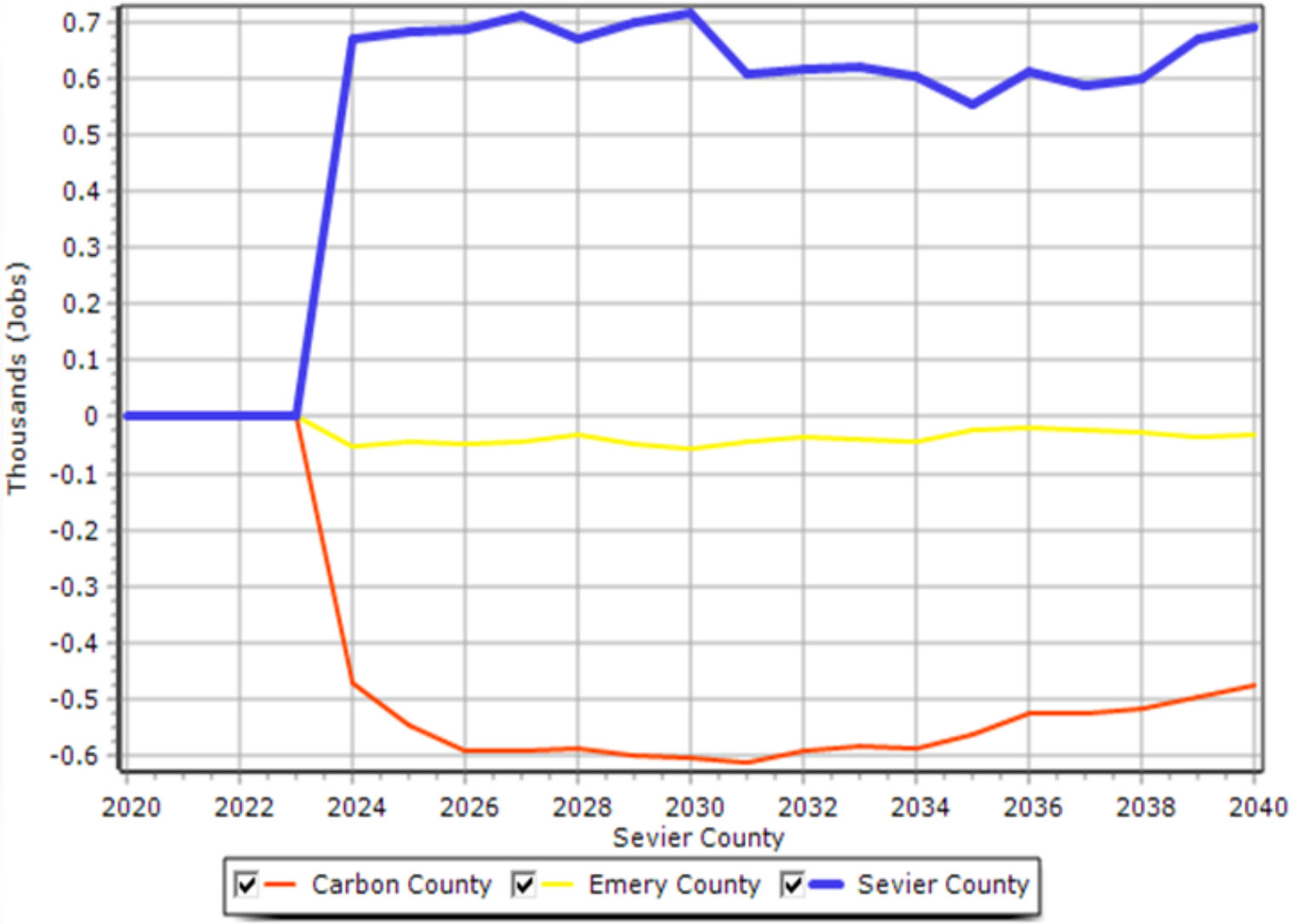
- Increased by $100 Million (opposed to $350 Million)
- Three county Manufacturing GDP estimated at $216.2 Million in 2018

Utilities Industry Sales

- $30 Million spread across three coal counties by output (opposed to $60 Million)

Total of $200 Million in Increased Output

Combined Scenario: Employment



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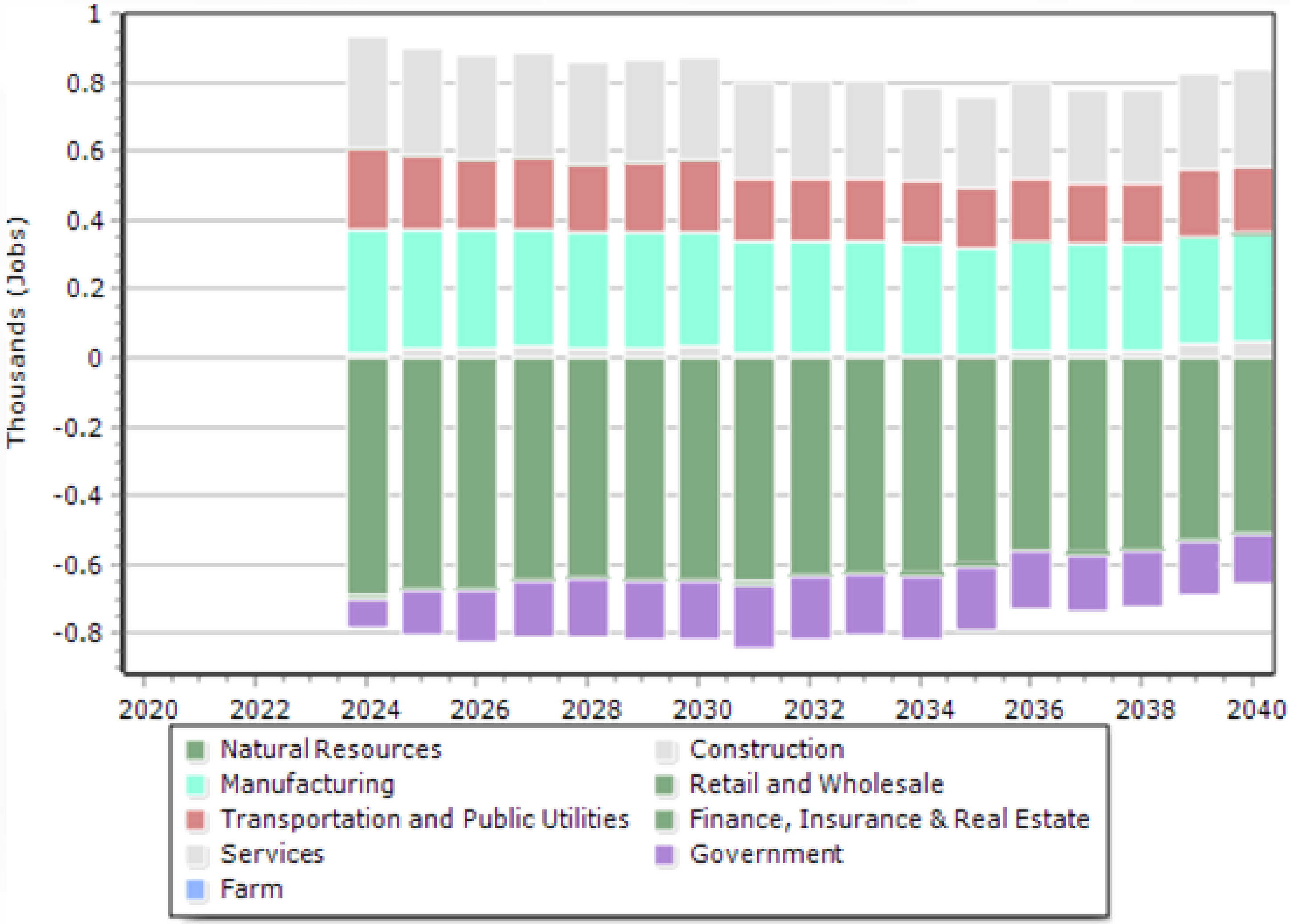
Combined Scenario: Employment



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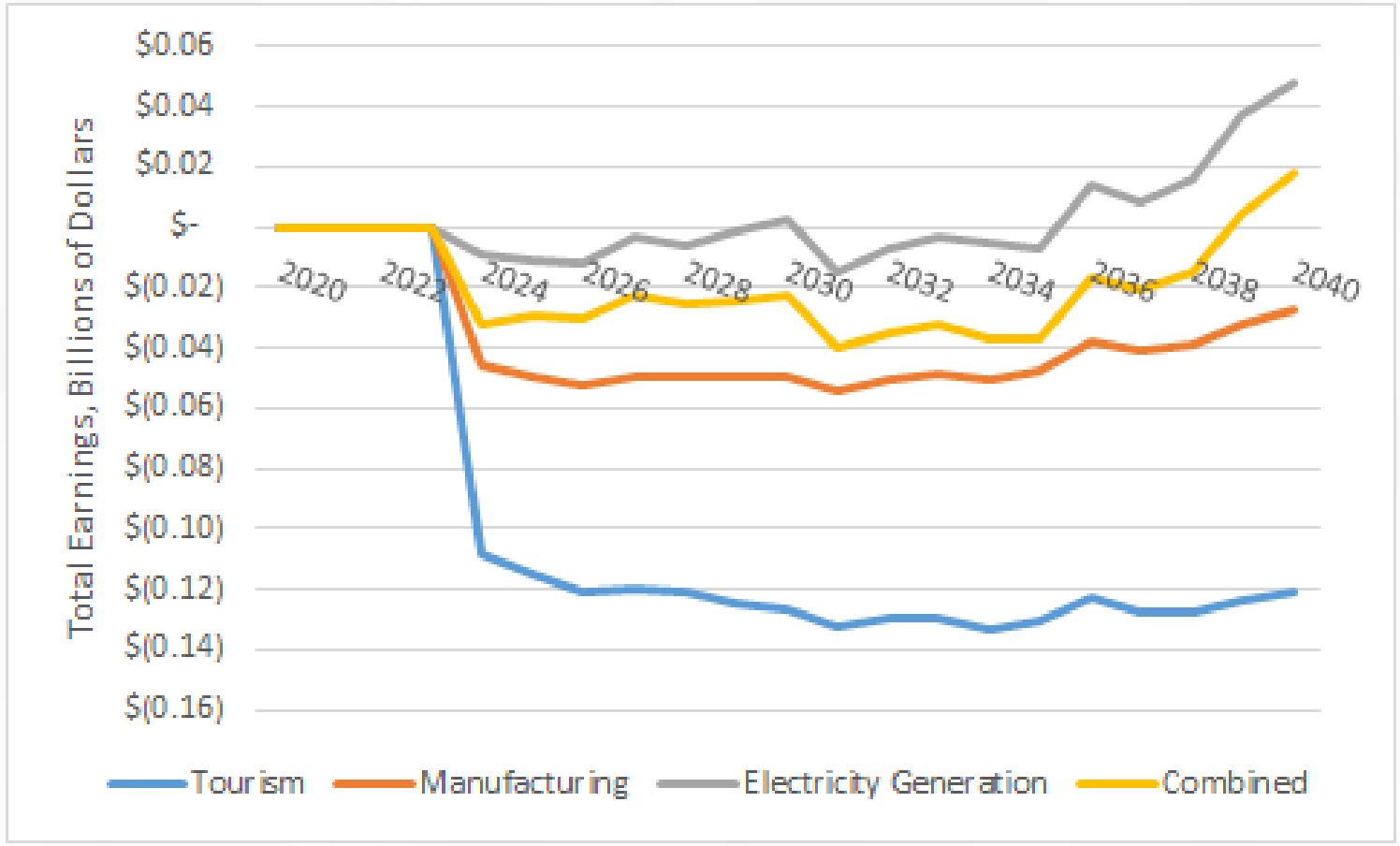
Compensation Change from Baseline: Coal Counties Combined



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Conclusions and Notable Results

Prosperity is Possible

- Job Losses are large as a percentage of local employment
- But can be recouped via other industries

Prosperity through Diversification

- Multiple industries increasing together makes recovery more likely
- Industries have synergistic characteristics

Industries are not Equal

- Wages between industries
- Education Required
- Tax Benefits

Economic Modeling Enables Planning

- Understand the future dynamic effects of changes in the economy
- Proactive planning to maximize economic opportunities

Economic Modeling: Why does it matter?

Clarify

- Understand economic, fiscal and demographic implications of policies before implementation
- Ensure that public policy serves the broad-based interests of the public

Predict

- Make predictions about the effects of policies before implementation
- Be proactive about emerging trends
- Make effective use of resources

Inform

- Inform policy with standard metrics rather than ideology or intention
- Address stakeholders with evidence that communicates how policy benefits or disadvantages their communities broadly

Thank you for attending!

For more information, please contact
info@remi.com

Notes

- Downen, C John. Et. Al. *Economic Impacts of Utah's Energy Industry, 2017*. Kem C Gardner Policy Institute. Februrary 2020. https://gardner.utah.edu/wp-content/uploads/EnergyReport-Feb2020.pdf?x71849
- Benway, DJ; Downen, John. *The Economic Impacts of Utah's Manufacturing Industry, 2018*. Kem C Gardner Policy Institute. May 2020. https://gardner.utah.edu/wp-content/uploads/Manufacturing-May2020.pdf?x71849
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