

NeRC

Northwest Economic Research Center
College of Urban and Public Affairs



SB306 Clean Air Tax or Fee Final Report **December 2014**



Presenters

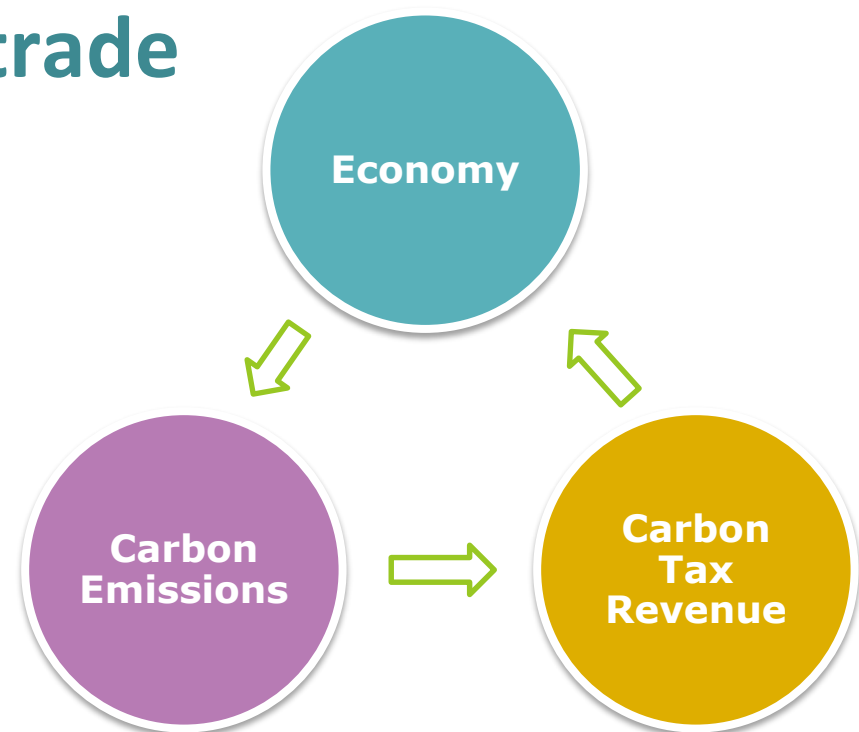
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Background

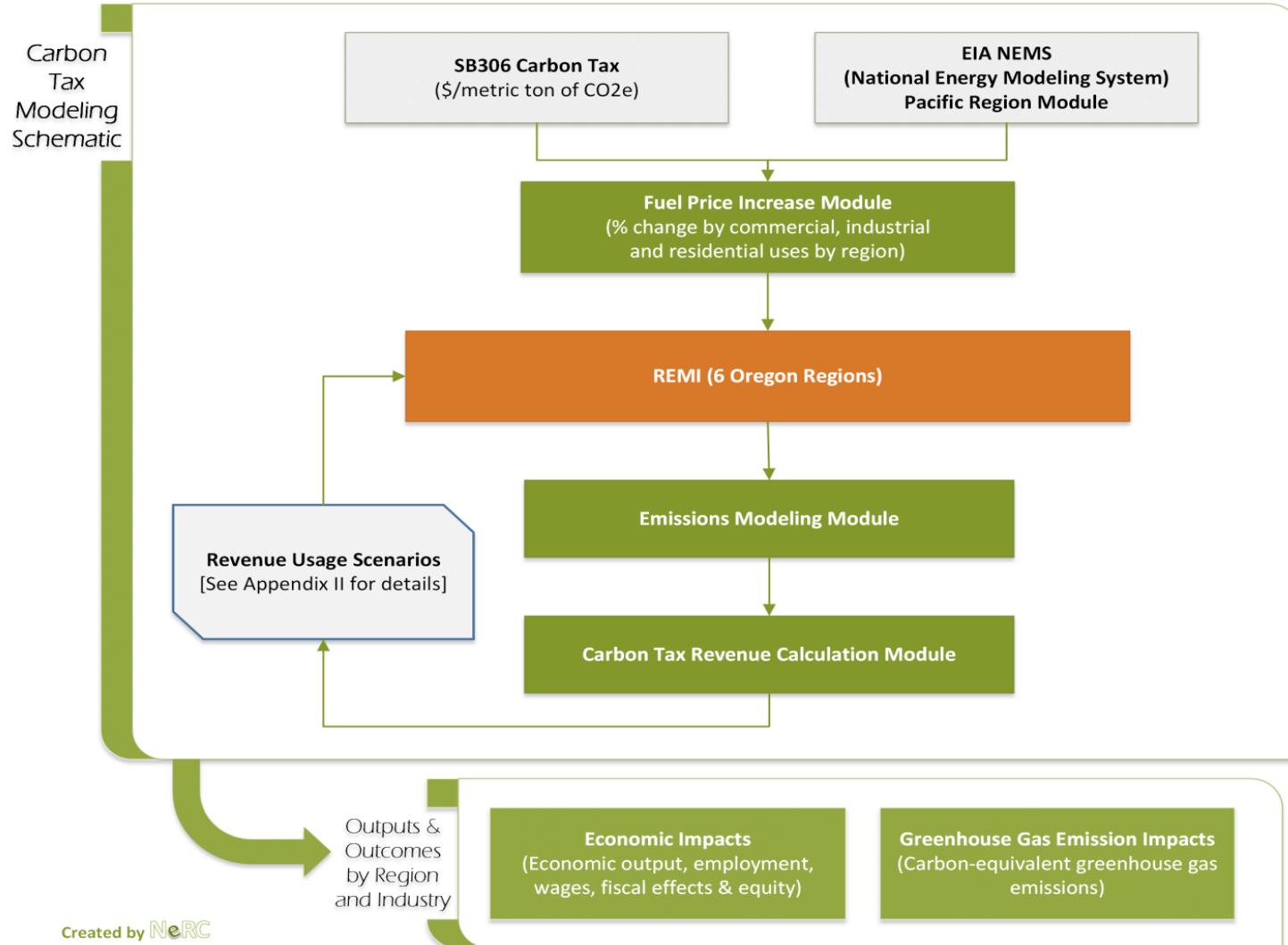
- **March 2013** – Carbon Tax & Shift Report
- **August 2013** – SB306 effective
- **September 2013** – SB306 RFP process
- **October 2013** – Project start
 - Monthly LRO update meetings
 - Technical Advisory Committee meetings
 - Stakeholder group meetings
 - Updates to Legislative committees
- **November 2014** – Completion of report

Limiting Carbon Emissions

- Regulatory controls
- Market mechanisms
 - **Carbon cap-and-trade**
 - **Carbon tax**



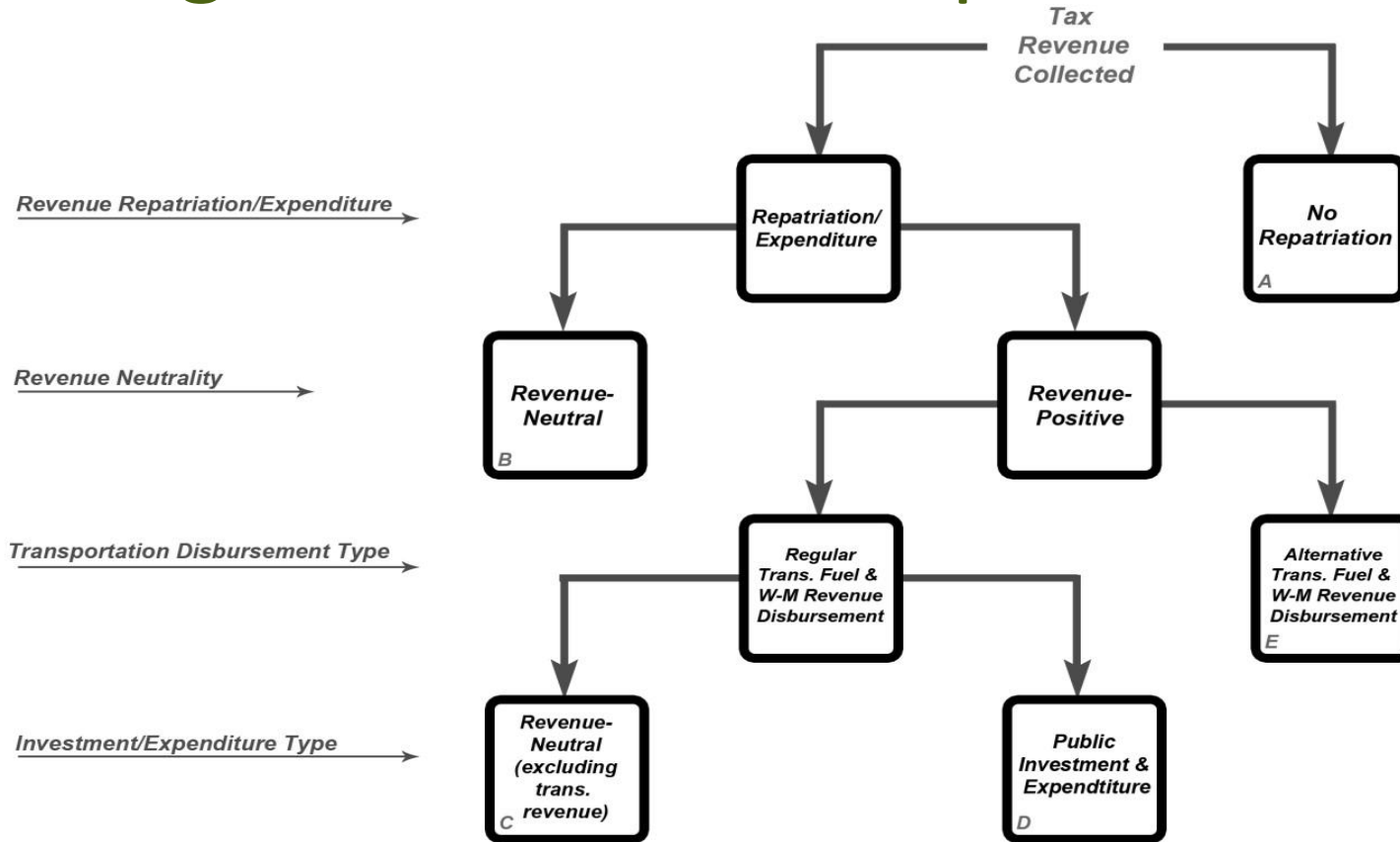
Methodology | Modeling Overview



Methodology | Establish Baselines

- **Economic baseline**
- **Emissions baseline**
 - **Energy-related fossil fuel combustion**
 - **Oregon Greenhouse Gas Inventory**
 - **In-boundary: natural gas & petroleum**
 - **In-boundary + Out-of-state: electricity**
 - **EIA NEMS & ODOE projected energy demand**

Methodology | Revenue Repatriation & Usage Scenario Development



See Report Appendix II for more detail on scenario schematic

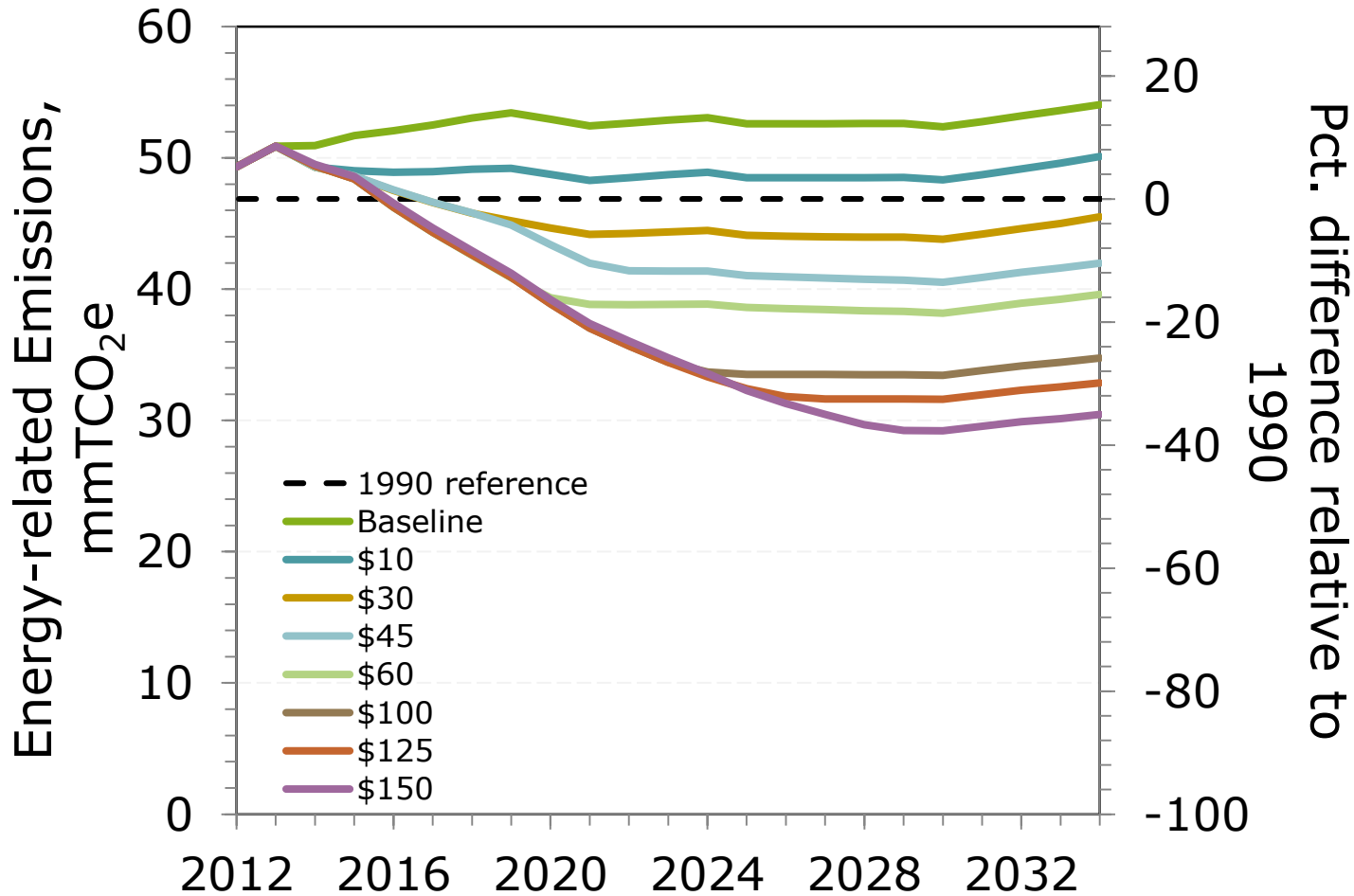
Methodology | Revenue Repatriation & Usage Scenario Development

- **A Scenarios:** Financial Reserve and General Fund
- **B Scenarios:** Revenue Neutral
 - Reduction in Taxes and Fees
- **C Scenarios:** Revenue Neutral Excluding Transportation-Related Revenues
 - Also Citizen Dividend Scenarios

Methodology | Revenue Repatriation & Usage Scenario Development

- **D Scenarios:** Public Investment and Expenditures
 - Low Income/Worker Assistance
 - Targeted Industry Support
 - Energy Efficiency
- **E Scenarios:** Alternative Transportation Revenue Disbursement
 - Unweighted VMT
 - Non-Highway Transportation Funding

Results | Emissions

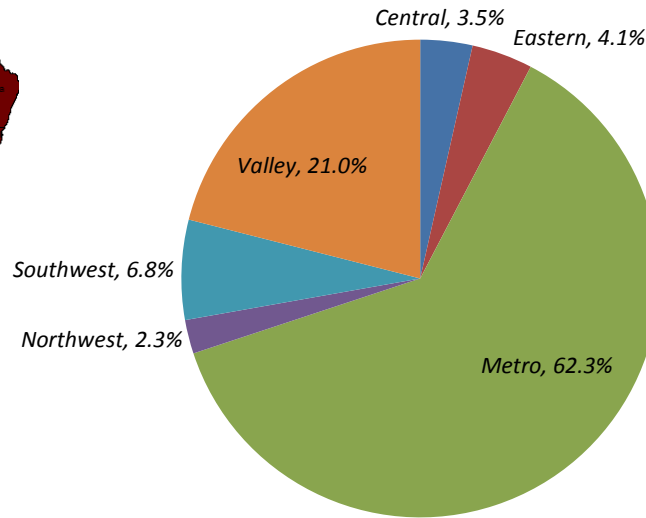
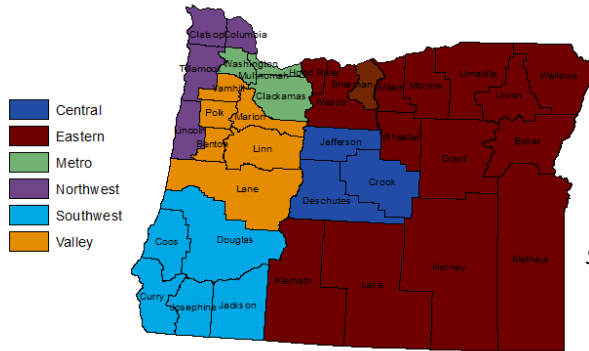


See Results: Carbon Tax Scenarios for full breakdown of emissions results

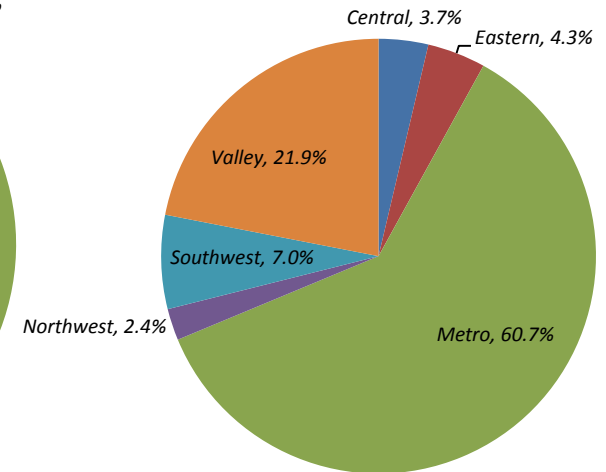
Results | Emissions

	Emissions (mmT CO ₂ e)	Reduction from baseline (%)	Change from 1990 levels (%)
<i>Baseline case</i>			
(no carbon tax)	53.1	0.0%	13.5%
<i>Carbon tax scenarios</i>			
\$10/metric ton	49.2	7.4%	5.1%
\$30/metric ton	45.1	15.0%	-3.6%
\$45/metric ton	41.6	21.7%	-11.1%
\$60/metric ton	39.2	26.2%	-16.2%
\$100/metric ton	34.5	35.1%	-26.4%
\$125/metric ton	32.2	39.4%	-31.3%
\$150/metric ton	30.3	42.9%	-35.2%

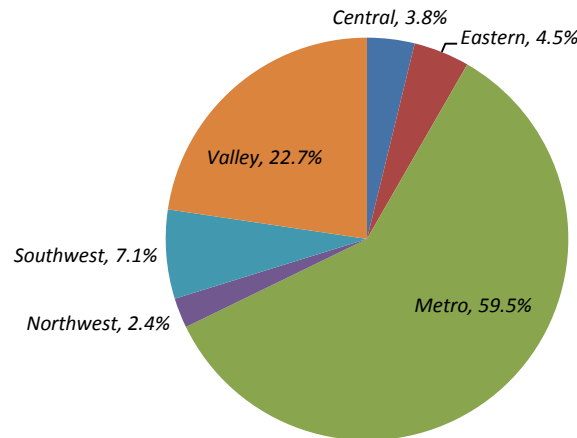
Results | Emissions



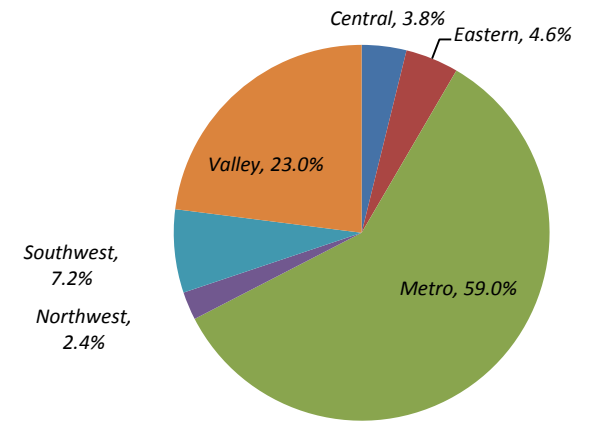
Baseline



\$30/ton

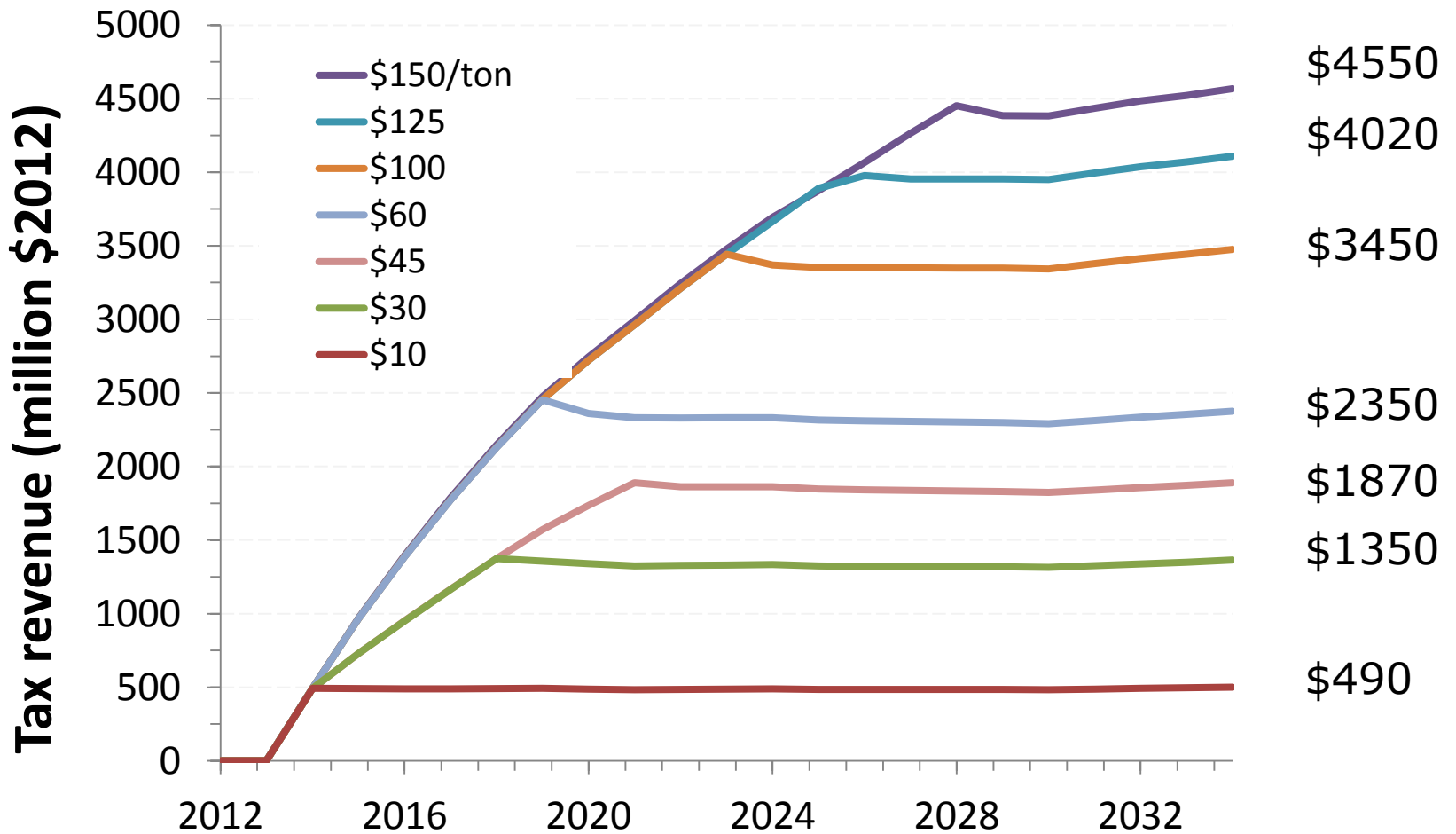


\$60/ton



\$100/ton

Results | Revenues



See Results: Revenue for breakdown of revenue estimates

Results | Oregon Economy Basics

2013

Employment = 1,679,377

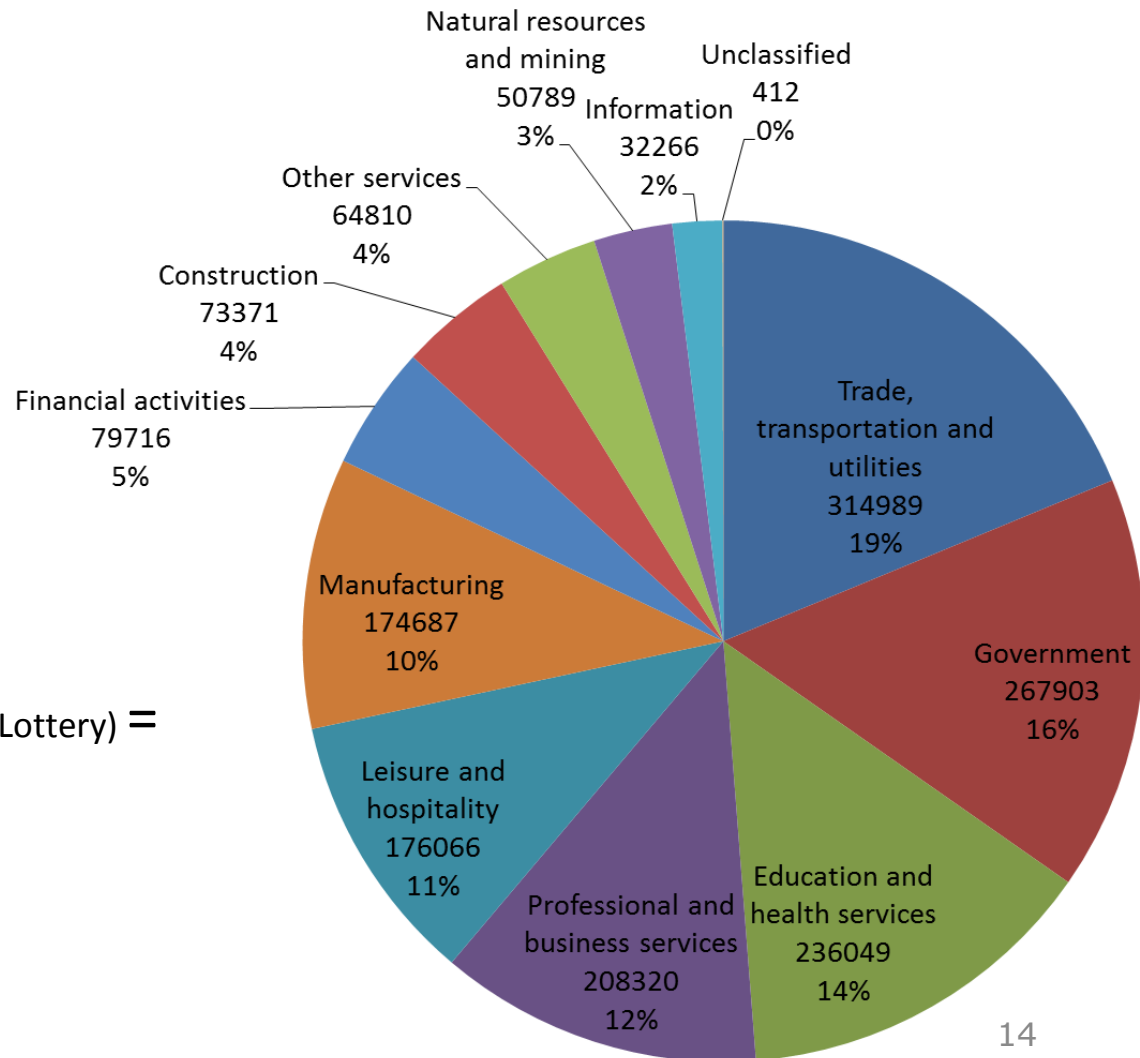
GDP = \$219,590,000,000

Real GDP growth = 4.4%

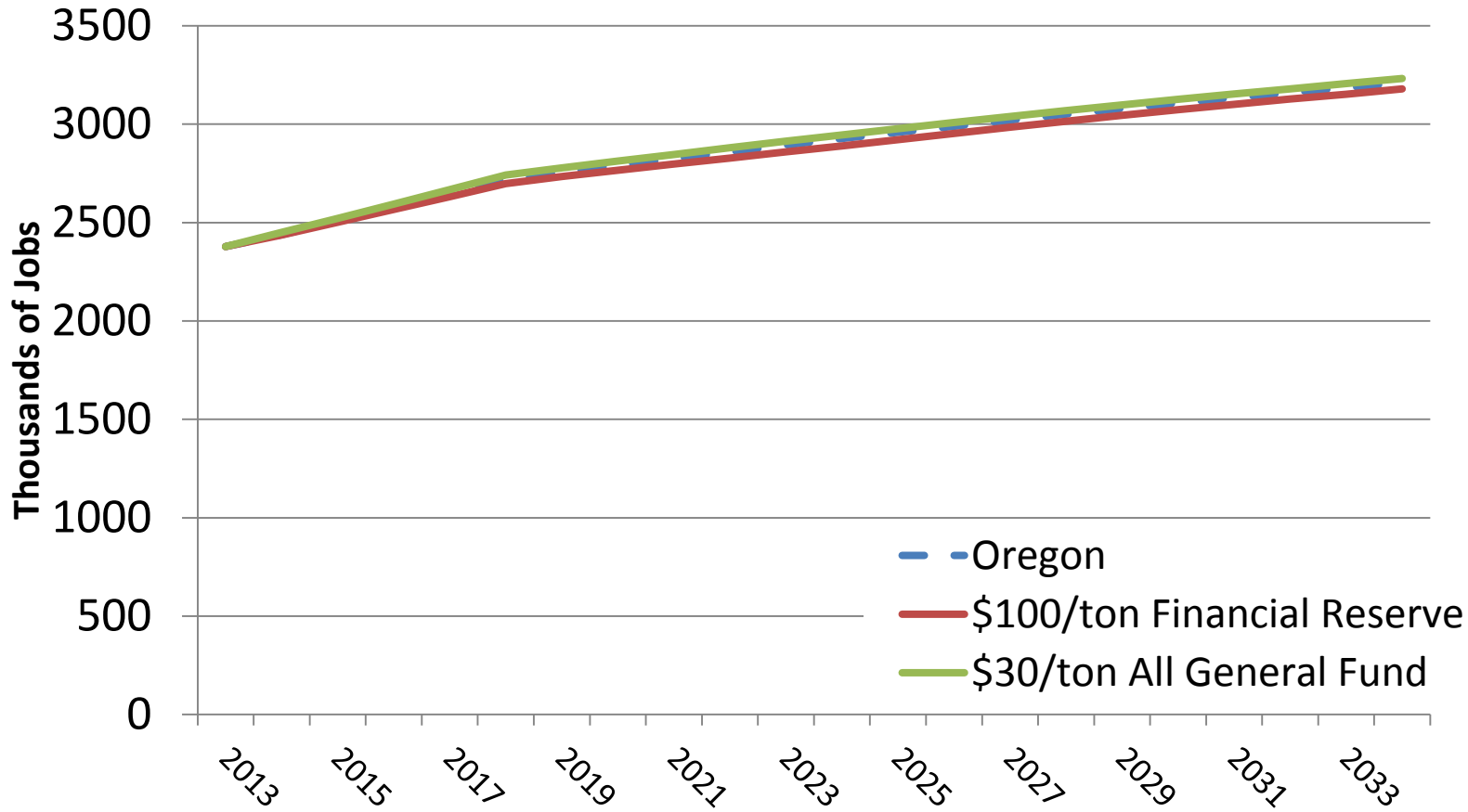
Total Compensation = \$97,755,000,000

Population = 3,930,065

Annual State Budget (General + Lottery) = \$8.2 billion



Results | Employment

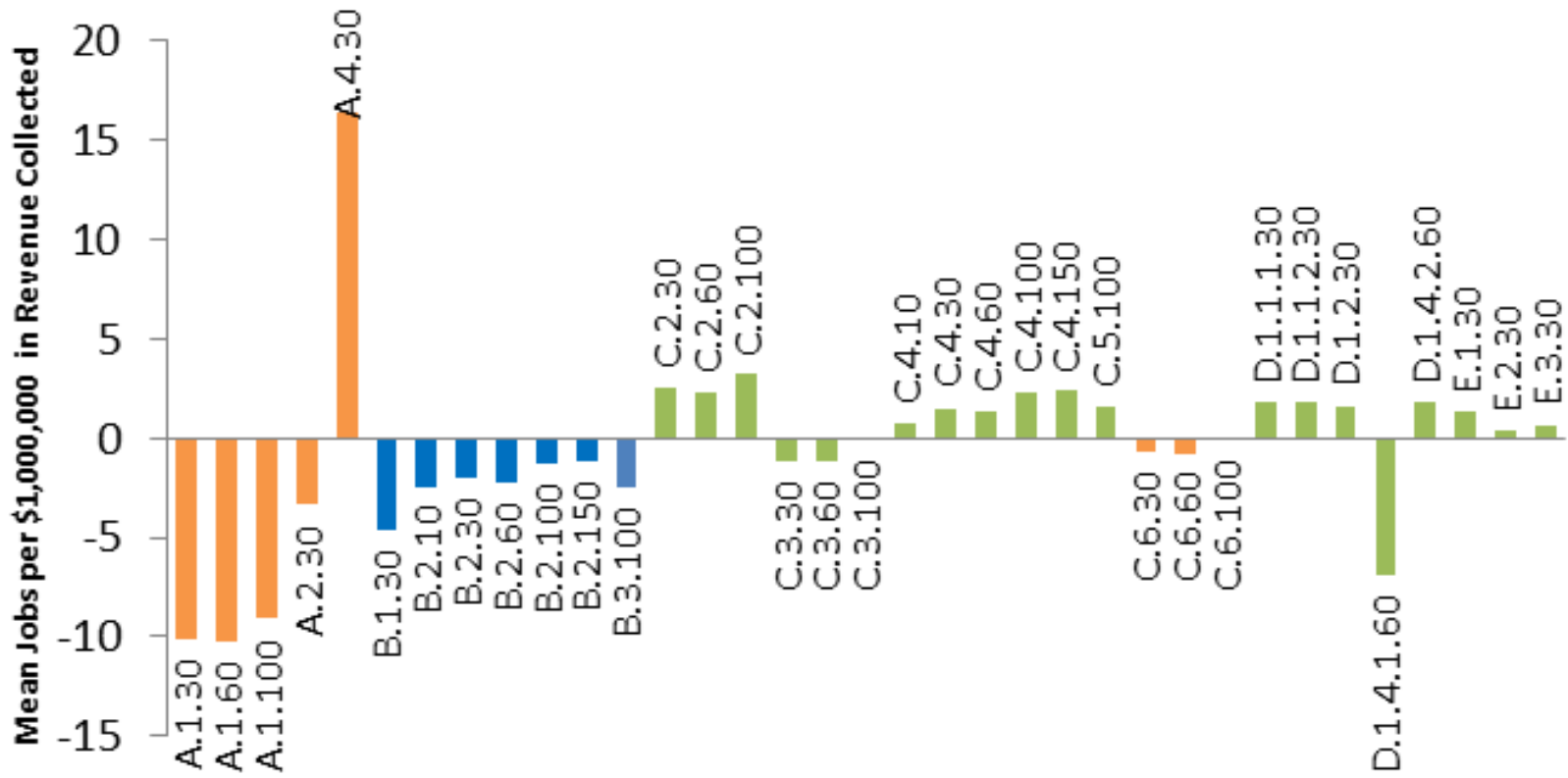


Results | Overview

		Maximum Level of Carbon Tax (per mTCO _{2e})					
		\$10	\$30	\$60	\$100	\$150	
Emissions Impact		-7%	-15%	-26%	-35%	-43%	
Tax Revenue ³		\$490M	\$1,350M	\$2,350M	\$3,450M	\$4,550M	
Revenue Usage Scenarios	A	Employment	-15K to 25K	-27K	-37K		
		Output	-0.6% to -0.4%	-1.1%	-1.35%		
	B	Employment	-1.1K	-4K	-8K	-9K	-14.5K
		Output	-0.05%	-0.2%	-0.5%	-0.5%	-0.7%
	C	Employment	0	+4K	+7K	+5.5K	+2K
		Output	-0.02%	-0.05%	-0.3%	-0.3%	-0.7%
	D	Employment		+5K	-13K to -9K		
		Output		-0.3%	-0.5%		
	E	Employment		0	-5K		
		Output		-0.3%	-0.5%		

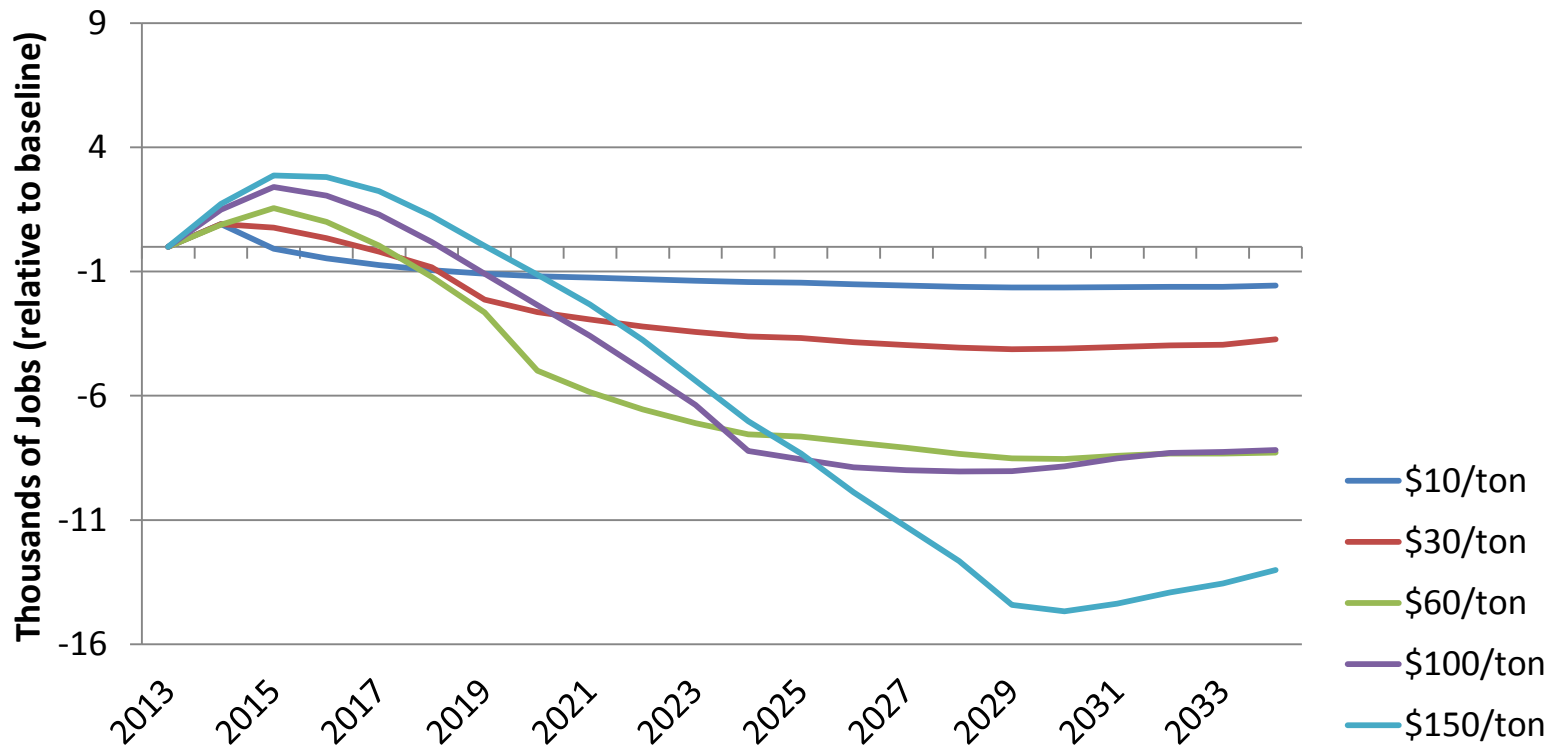
See Revenue Repatriation and Expenditure Scenario Results for economic impacts

Results | Jobs Index



Scenario Results

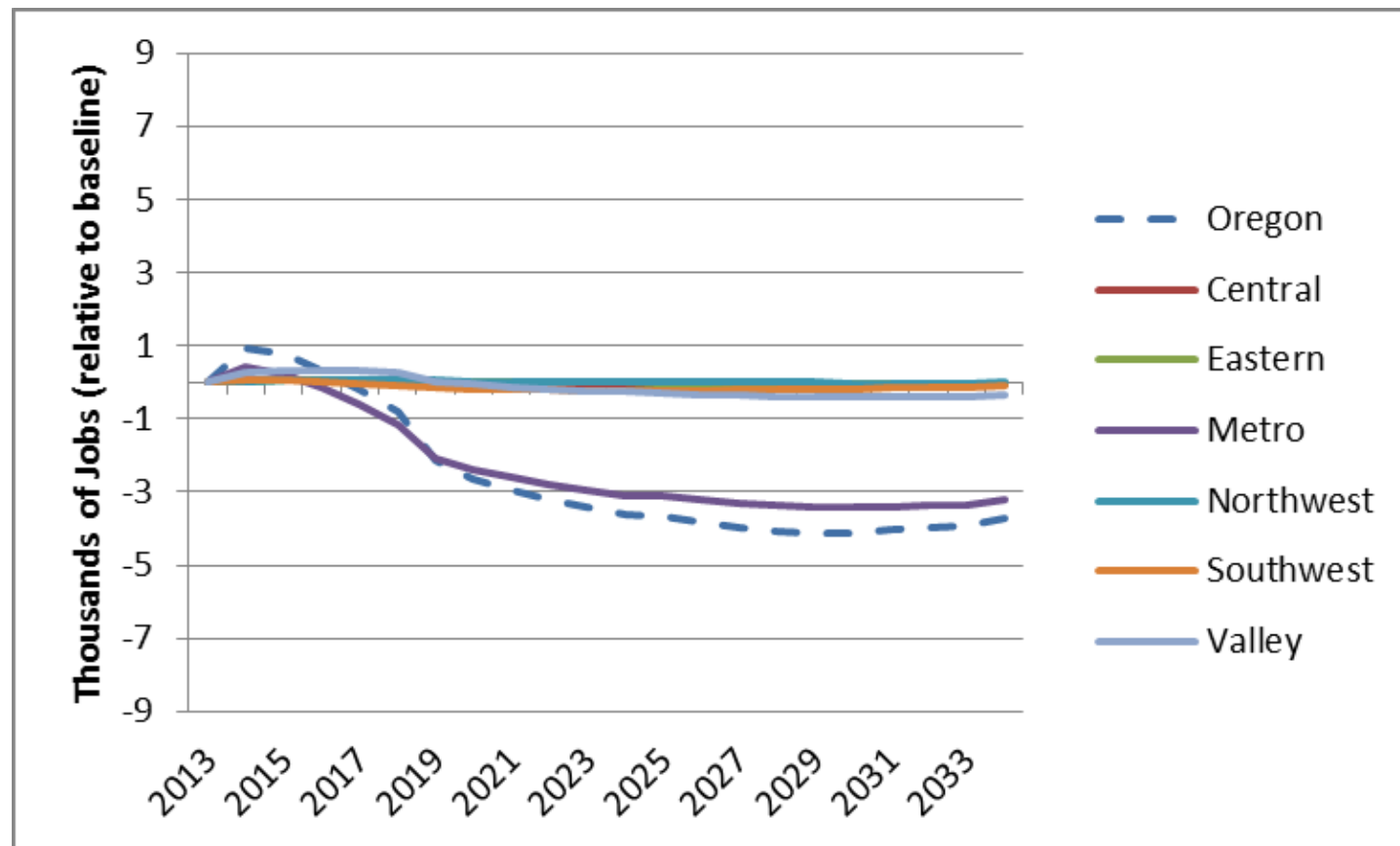
B.2 - Employment Impacts



See Report Appendix II for detailed breakdown of scenario economic impacts

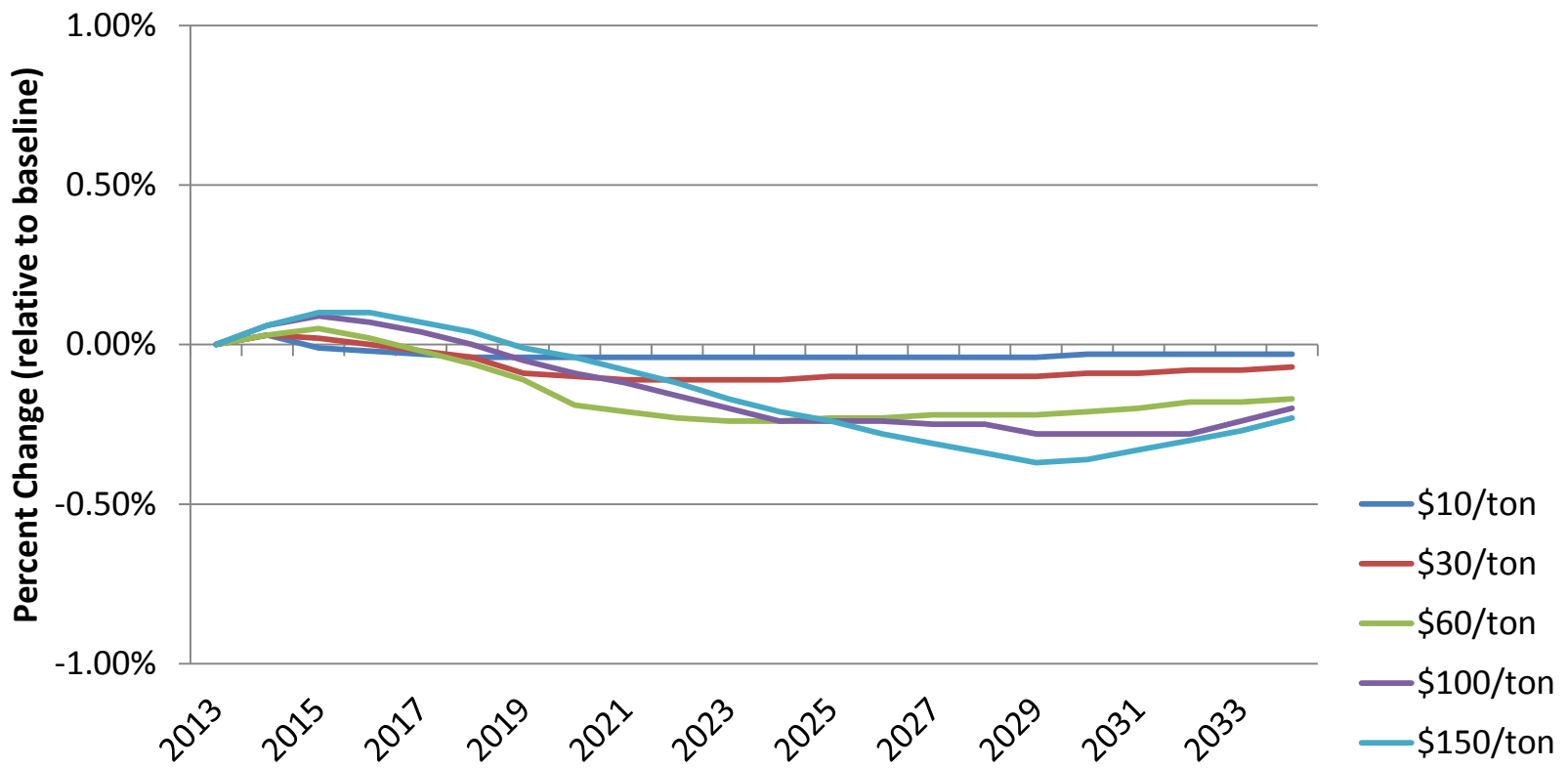
Scenario Results

B.2.30 – Regional Employment Impacts



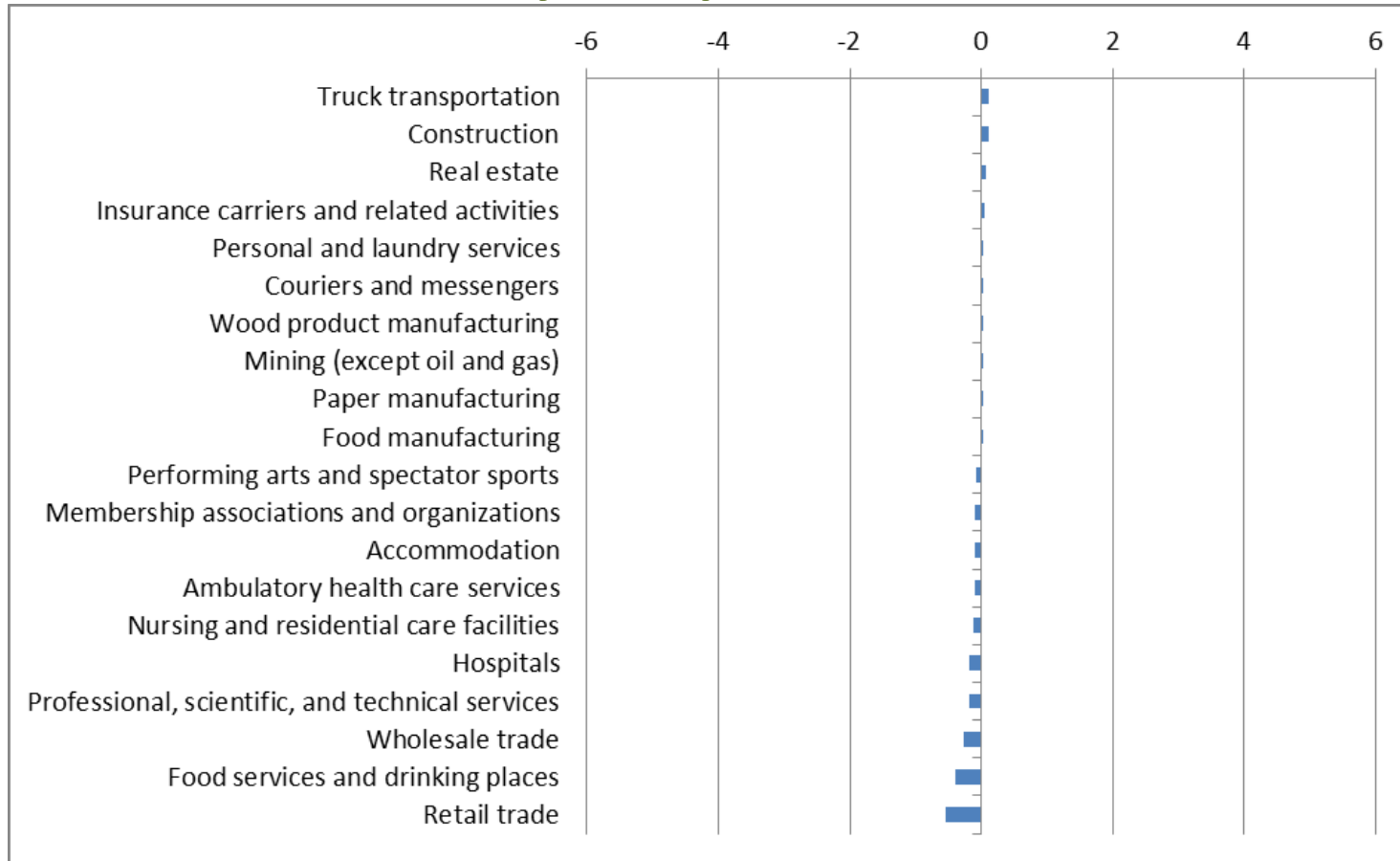
Scenario Results

B.2 - Output Impacts



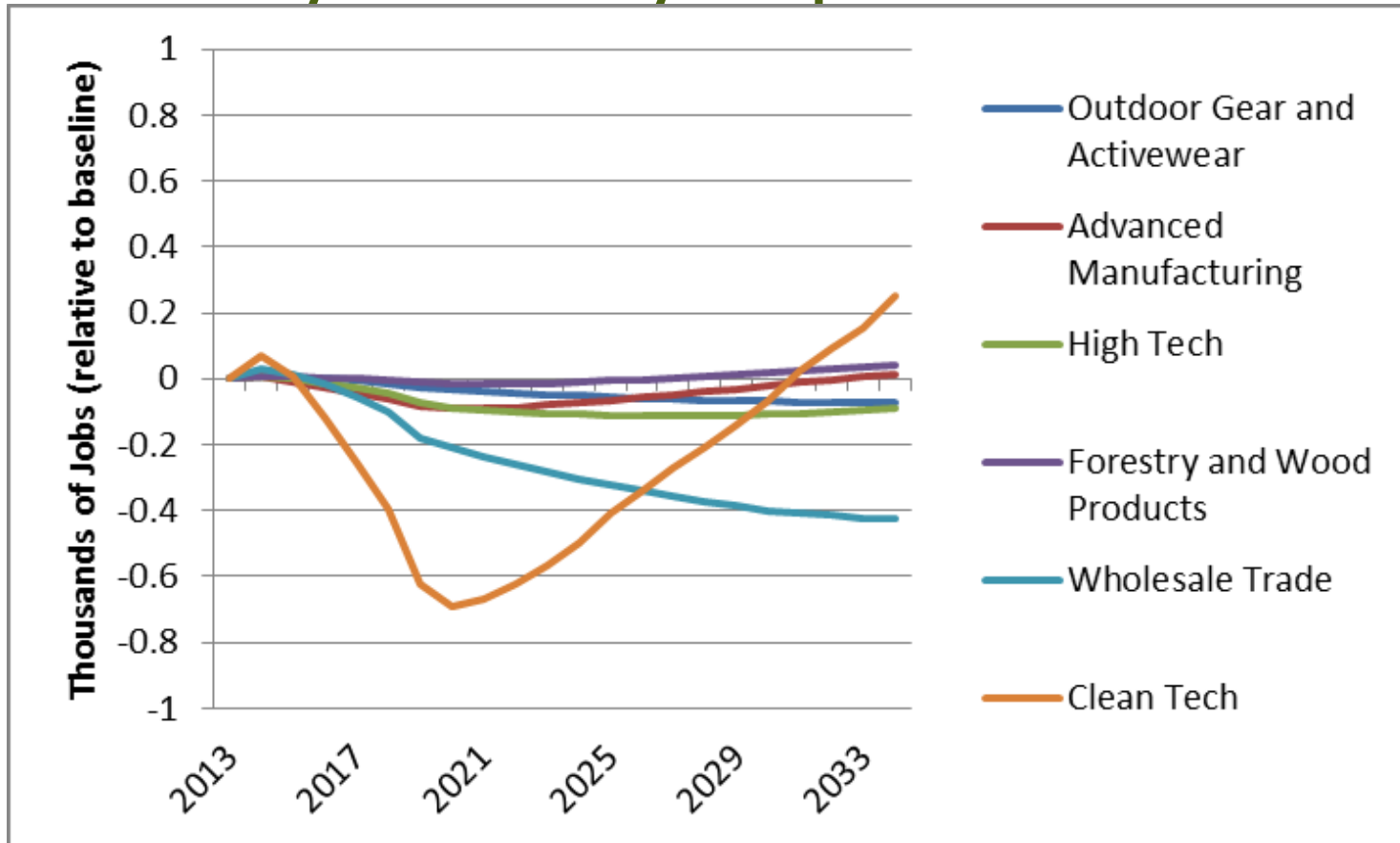
Scenario Results

B.2.30 – Industry Impacts



Scenario Results

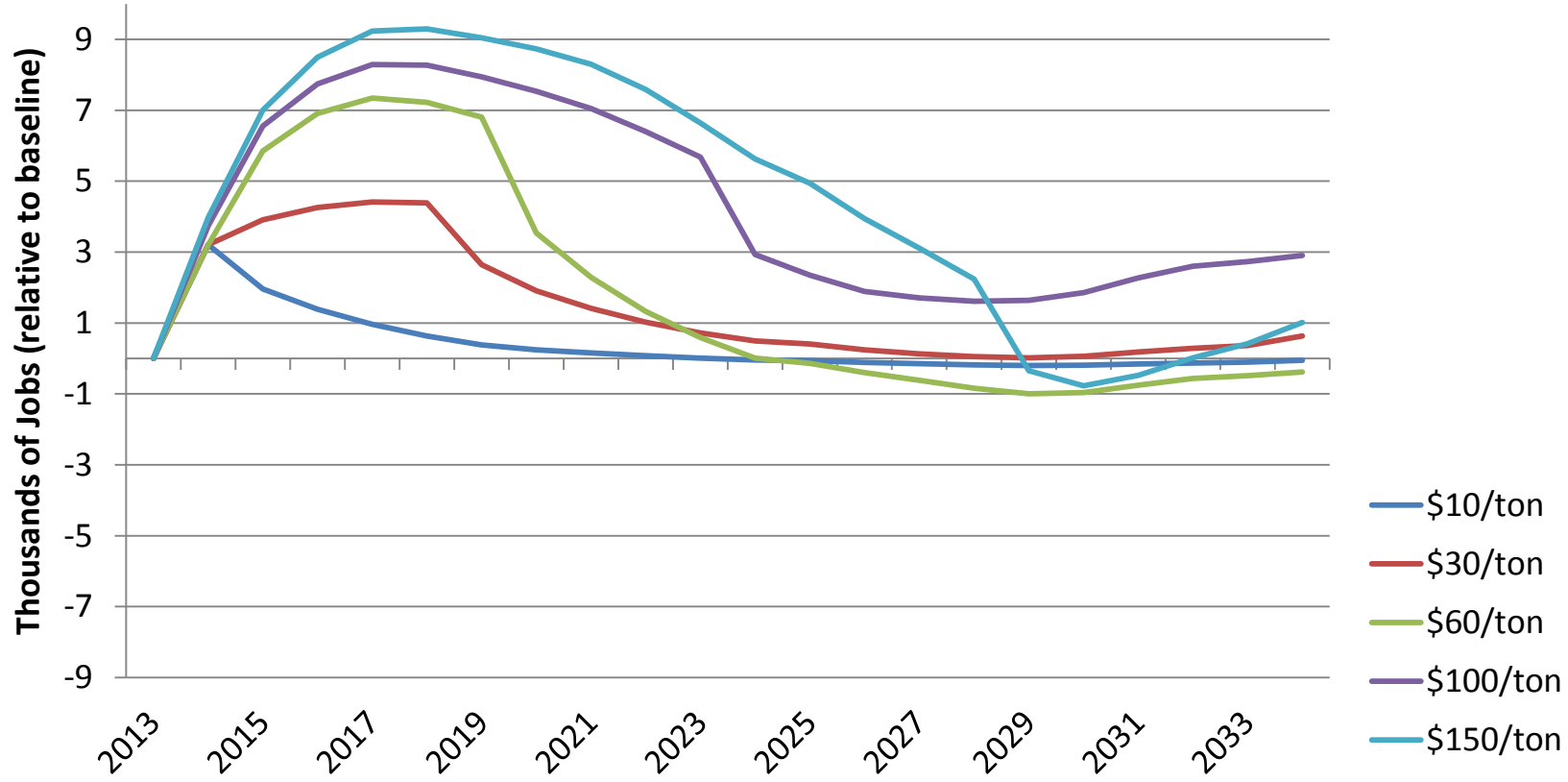
B.2.30 Key Industry Impacts



See Revenue Repatriation and Expenditure Scenario Results: Key Industries

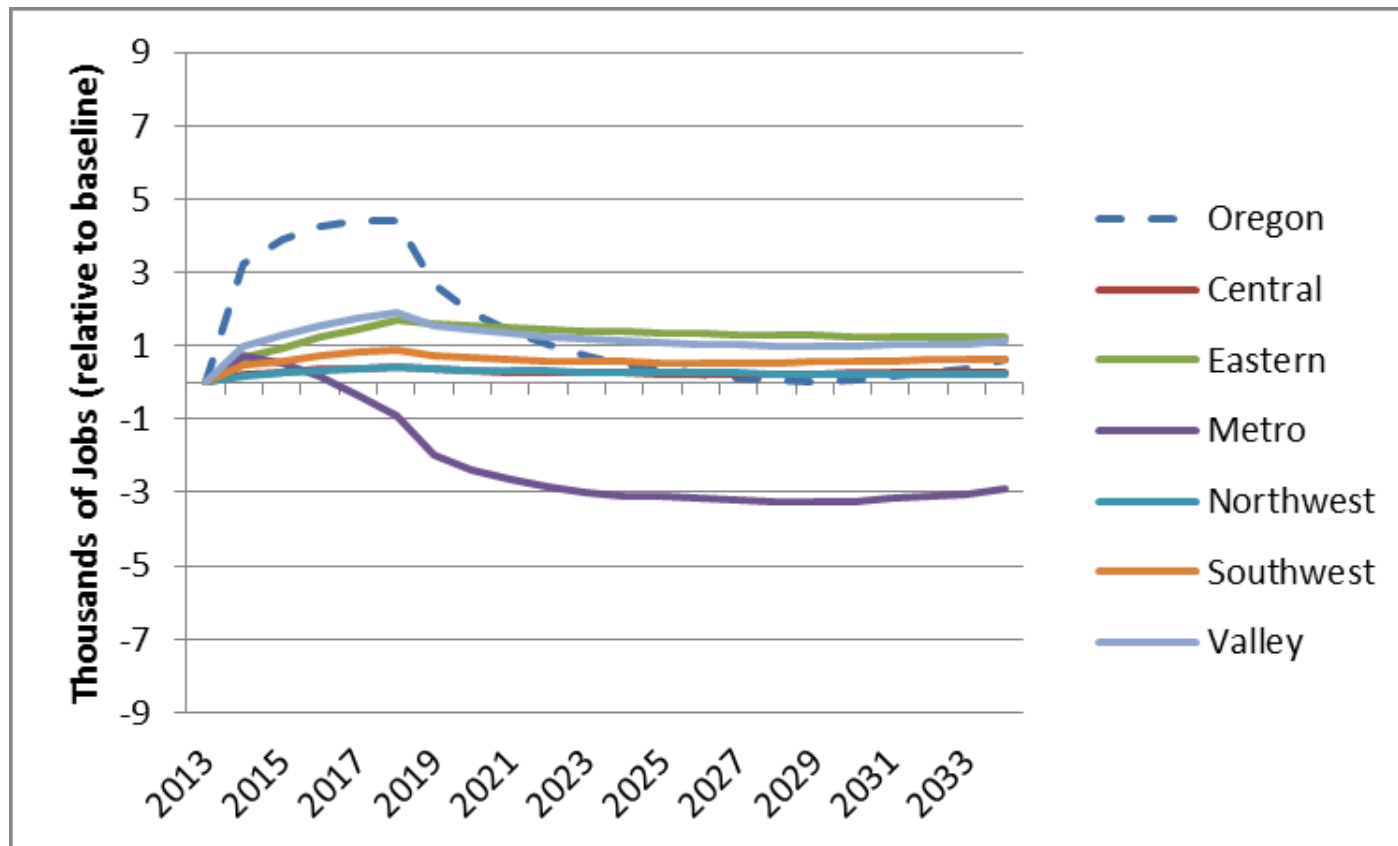
Scenario Results

C.4 - Employment Impacts



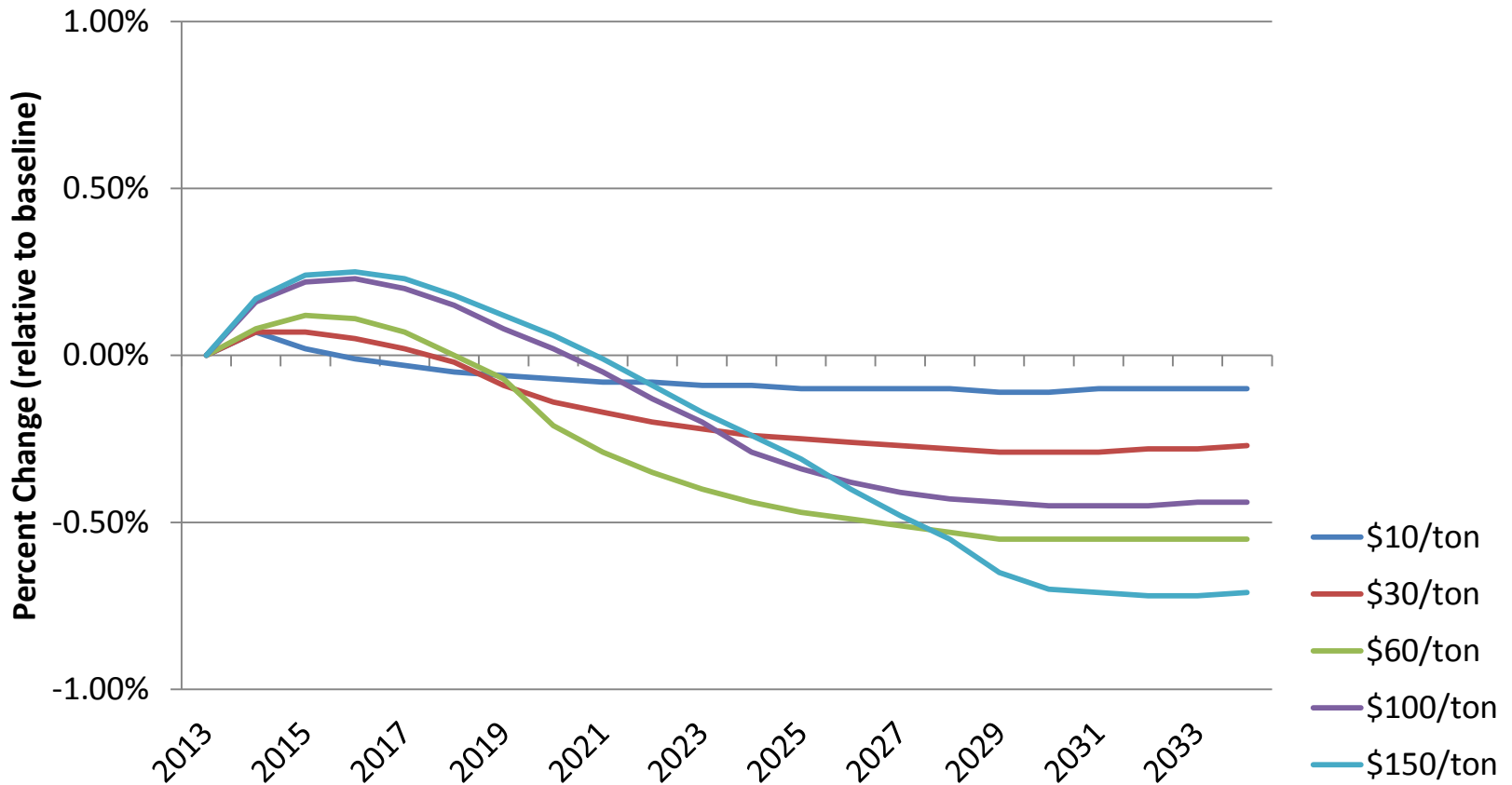
Scenario Results

C.4.30 – Regional Employment Impacts



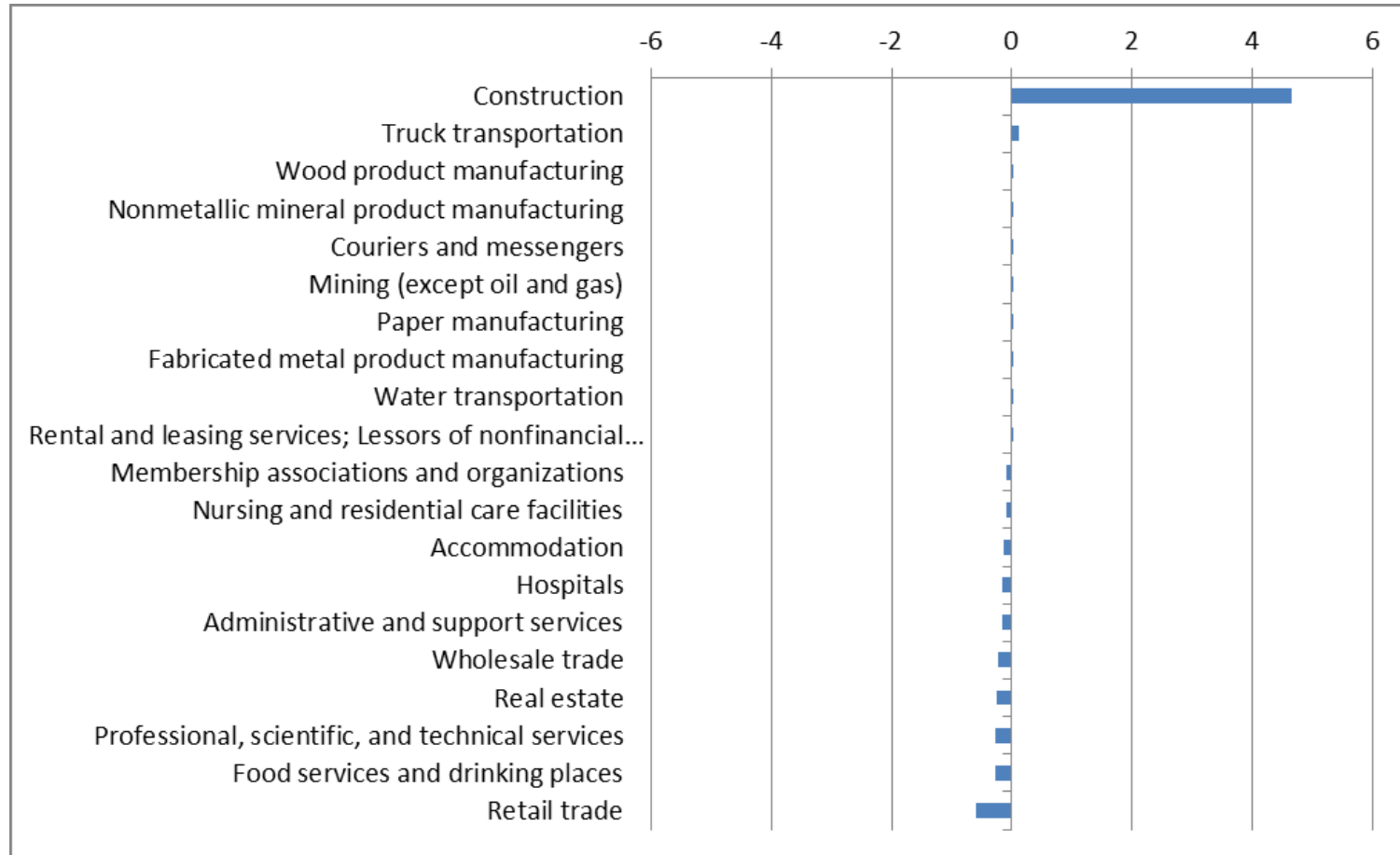
Scenario Results

C.4 - Output Impacts



Scenario Results

C.4.30 – Industry Impacts



Evaluation | Carbon Tax and Existing Oregon Laws

- **Renewable Portfolio Standard (RPS)**
- **Motor Vehicle Emissions**
 - Low-Carbon Fuels Standards (Clean Fuels Program)
 - Renewable Fuels Standards (RFS)
 - Motor Vehicle Emissions Standards
- **Electric Utilities**
 - Emissions reporting requirements
 - Electric utility facility siting requirements and standards

Evaluation | Carbon Tax and Existing Oregon Laws

	Existing Law	Purpose	Interaction with Carbon Tax
RPS	Renewable Portfolio Standards (RPS)	<ul style="list-style-type: none"> Promote renewable fuels in electric power sector through mandate/market mechanisms Goal: 25% renewables by 2025 	<ul style="list-style-type: none"> Likely complementary Potential overlap under specific conditions
	Low-Carbon Fuels Standards (Clean Fuels Program)	<ul style="list-style-type: none"> Reduce life-cycle carbon intensity of transportation fuels through mandate/market mechanisms Goal: 10% reduction in 10-year period 	<ul style="list-style-type: none"> Potentially complementary or additive Potential sector-specific overlap under certain conditions
Motor Vehicle Emissions	Renewable Fuels Standards (RFS)	<ul style="list-style-type: none"> Promote lower-pollution alternatives to gasoline and diesel Goal: 10% ethanol and 5% biodiesel requirements for gasoline and diesel, respectively 	<ul style="list-style-type: none"> Complementary Minimal overlap
	Motor Vehicle Emissions Standards	<ul style="list-style-type: none"> Improve vehicle fuel economy Reduce unnecessary transportation emissions 	<ul style="list-style-type: none"> Complementary
	Emissions Reporting Requirements	<ul style="list-style-type: none"> Measure GHG emissions from power sector 	<ul style="list-style-type: none"> Complementary
Electric Utilities	Electric Utility Facility Siting Requirements and Standards	<ul style="list-style-type: none"> Reduce GHG emissions from electricity generation through emissions caps 0.675 lbs/kWh for baseload gas plants, 1100 lbs/MWh for all generation 	<ul style="list-style-type: none"> Complementary under specific conditions Potential sector-specific overlaps under certain conditions Potential decrease in offsets

Other Considerations

Border Tariffs

Non-Combustion Emissions

Impact on Tourism

Impact on Government

Further Research

Energy efficiency feedback

Increase data detail

Implementation

Health impacts

Emissions feedbacks

See Further Research and Applications

Conclusions

- Significant emissions impacts and revenue generating potential
- Economic impacts are small relative to broader economy
 - Differ by region, income, and industry
- Possible to offset negative impacts with targeted expenditure or investment



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