

Just Transition Study

Daraius Irani, Ph.D.
Chief Economist
Regional Economic Studies Institute

Towson.edu/RESI



Introduction

- Maryland Department of the Environment (MDE) tasked RESI to update a 2019 study that evaluated the economic impacts **resulting from transitioning away from fossil fuels towards less carbon-intensive fuel sources.**
- These **economic dislocations** include:
 - Direct impacts to fossil-fuel-reliant industries and workers
 - Related disparities (e.g., on related occupations and clean energy jobs)
 - Potential impacts on transitioning communities

Overview of Just Transition

- In 2019, when **renewable energy overtook** coal consumption for the first time in the U.S., there were 6.8 million U.S. workers employed in traditional energy sectors.
- The Just Transition (JT) framework provides strategies for **offering training and job opportunities to workers affected by environmental policies**, while ensuring **equitable solutions** for communities impacted by fossil fuels.
- Cost of JT framework in the U.S.: estimated at **\$500 million per year** (1% of total annual investment)

Just Transition Best Practices

A successful JT plan should seek to:

- Recognize which groups and communities will **be most-heavily impacted** by the transition
- Obtain **input from both workers and community** members early in planning stages
- Provide a **phase-out timeline** and JT **oversight body**
- Plan **for funding needs** early in the transition process
- Ensure **new jobs in sustainable energy** are high-quality positions and inclusive to displaced workers
- Create **worker training programs** that facilitate the transfer of employees to new jobs
- Support **regional industry diversification** for areas that are particularly reliant on fossil fuel industries

Just Transition Case Studies

- Holyoke, MA
 - Community-driven plan pushed for the **closure of the last coal-fired power plant** in MA in 2014
 - Four-year plan helped workers **transition into new careers** or retirement
 - Developed a **clean alternative energy generation project** to replace the plant
 - Former site is now **the largest solar farm** in the state
- State of Colorado
 - Has **one of the most-organized** efforts, including JT Office and JT Advisory Committee
 - Plan released in December 2020 emphasizes **helping most-affected workers and communities** during the transition
 - Made a commitment to **track performance metrics** related to:
 - Adoption of renewable energy
 - Retention and creation of jobs in coal communities.

Methodology: Identification of Industries of Focus

- **Economic Modeling:** The economic effects of cost changes resulting from the 2030 GGRA Plan on the different industries in Maryland are estimated
- **Economic Modeling Tool:** REMI PI+ software program
- **Forecasted Period:** 2021-2050
- **Outcome:** RESI identified 4 threatened fossil-fuel reliant industries and 2 additional negatively affected industries based on employment projections

Methodology: Identification of Threatened Occupations

- **Method 1:** Using REMI's employment results to identify general occupations threatened by environmental policies
- **Method 2:** Identifying threatened industry-specific occupations using the national industry-to-occupation crosswalk obtained from the U.S. Bureau of Labor Statistics (BLS) on REMI industry data

Methodology: Identification of Related and Alternative Occupations

- **Alternative 1: Related occupations were chosen based on several factors, including:**
 - Skill transfers
 - Existing patterns of employment changes
 - Growth projections
 - Salary expectations
- **Alternative 2: Fastest-growing occupations:**
 - Identified using REMI, while accounting for environmental policy impacts
 - Used sources: MWE, O*Net, BLS
- **Alternative 3: Clean energy occupations**
 - Local clean energy job training opportunities were also explored

Information on job training was obtained from sources including career planning websites, local training finder websites, and occupational databases

Results: Employment Trends in Threatened Industries (Without policy impacts)

Industries	Maryland Employment 2019	Average Annual Change 2021-2030	Average Annual Change 2031-2040	Average Annual Change 2041-2050	Total Change 2021-2050
Oil and Gas Extraction	1,241	35	63	85	1,819
Mining (Except Oil and Gas)	1,308	-26	-12	-9	-458
Utilities	10,308	-89	-5	-4	-980
Petroleum and Coal Products Manufacturing	901	-9	-7	-6	-227
Construction	245,466	-2,466	587	1,272	-6,072
Truck Transportation	26,347	-250	9	53	-1,875

Results: Policy Impact Projections for Threatened Industries

Industries	Average Annual Policy Impact 2021-2030	Average Annual Policy Impact 2031-2040	Average Annual Policy Impact 2041-2050	Total Policy Impact 2021-2050
Oil and Gas Extraction	-3	-6	-5	-142
Mining (Except Oil and Gas)	1	-2	0	-9
Utilities	1	-1	-6	-60
Petroleum and Coal Products Manufacturing	-4	-3	-3	-97
Construction	1,330	-667	-192	4,705
Truck Transportation	-56	-152	-81	-2,879

Results: Net Effect on Threatened Industries (Trend + Policy)

Industries	Average Annual Change 2021-2030	Average Annual Change 2031-2040	Average Annual Change 2041-2050	Total Change 2021-2050
Oil and Gas Extraction	28	48	72	1,473
Mining (Except Oil and Gas)	-25	-13	-9	-467
Utilities	-88	-6	-10	-1,040
Petroleum and Coal Products Manufacturing	-13	-11	-9	-323
Construction	-1,137	-80	1,080	-1,367
Truck Transportation	-305	-142	-28	-4,753

Results: Employment Trends in Broad Threatened Occupations (No policy impacts)

Occupation	Maryland Employment 2019	Average Annual Change 2021-2030	Average Annual Change 2031-2040	Average Annual Change 2041-2050	Total Change 2021-2050
Motor Vehicle Operators	74,980	-445	497	653	7,056
Material Moving Workers	108,180	-204	620	823	12,400
Material Recording, Scheduling, Dispatching, and Distributing Workers	31,880	-478	247	373	1,421
Vehicle and Mobile Equipment Mechanics, Installers, and Repairers	27,470	-214	120	183	885

Results: Policy Impact Projections for Broad Threatened Occupations

Occupation	Maryland Employment 2019	Average Annual Policy Impact 2021-2030	Average Annual Policy Impact 2031-2040	Average Annual Policy Impact 2041-2050	Total Impact 2021-2050
Motor Vehicle Operators	74,980	5	-112	-58	-1,648
Material Moving Workers	108,180	30	-32	-21	-221
Material Recording, Scheduling, Dispatching, and Distributing Workers	31,880	21	-18	-17	-146
Vehicle and Mobile Equipment Mechanics, Installers, and Repairers	27,470	15	-11	-9	-250

Results: Policy Impact Projections for Detailed Threatened Industry-specific Occupations

Occupation	Employment in Threatened Industries, 2019	Average Annual Impact 2021-2030	Average Annual Impact 2031-2040	Average Annual Impact 2041-2050	Total Impact 2021-2050
Heavy and Tractor-Trailer Truck Drivers	17,820	-12	-98	-50	-1593
Laborers and Freight, Stock, and Material Movers, hand	3,260	3	-17	-8	-217
Bus and Truck Mechanics and Diesel Engine Specialists	1,210	-1	-6	-3	-102
Dispatchers, Except Police, Fire, and Ambulance	1,046	1	-5	-2	-63
Petroleum Pump System Operators, Refinery Operators, and Gaugers	219	-1	-1	-1	-23

Community Impacts

Transition impacts are not evenly distributed, and may have disproportionate effects in some communities.

- Secondary impacts on companies that have relied on business from local workers and facilities
- Decreased tax revenues that are needed to support public services
- Surrounding “fence-line communities” that have borne negative impacts of fossil-fuel activities
- Areas where fossil-fuel activities serve as regional employment anchor

Community Impacts

Federal support for communities through:

- Capacity building that leverages local assets
- Financial support to public and community organizations
- Financial support to private for-profit firms

State and local support mechanisms:

- Increasing interagency and local stakeholder communications
- Geographically targeting affected areas
- Incentivizing hiring of local labor and displaced workers, including for restorative justice projects

Conclusion

- Overall, GHG-reduction policies will likely be responsible for **modest slowing of growth or acceleration of the existing natural decline** of most fossil-fuel-reliant industries identified.
- Though many occupations could potentially transfer from fossil-fuel-reliant sectors to clean energy (e.g., Electrical Engineers or Plant and Systems Operator), **training programs can assist displaced workers with transfer to sustainable career.**
- Exclusively **clean-energy jobs** (such as Solar Photovoltaic Installers) have **high projected growth**, but currently comprise **small proportion of employment** in Maryland.
- JT plans should consider the **disproportionate effects on some communities**, providing funding and policies that support restorative justice and economic growth.

Q&A

dirani@towson.edu

Towson.edu/RESI



Analysis: Related Occupations for Heavy Tractor-Trailer Truck Drivers (Example)

Occupation	Maryland Employment 2019	Maryland Average Annual Wage	Minimum Education	On-the-Job Training	Projected Growth 2018-2028
Heavy and Tractor-Trailer Truck Drivers	23,270	\$50,090	Postsecondary nondegree award	Short-term OTJ	10.9%
Maintenance and Repair Workers	19,480	\$46,340	HS/Equivalent	Moderate-term OTJ	13.8%
Sailors and Marine Oilers	540	\$58,050	No formal educational credential	Moderate-term OTJ	15.2%
Captains, Mates, and Pilots of Water Vessels	570	\$80,460	Postsecondary nondegree award	None	14.5%
Transportation Inspectors	490	\$62,080	HS/Equivalent	Moderate-term OTJ	8.6%

Analysis: Fastest Growing Occupations

Occupation	Average Annual Percent Change	Average Annual Change	Average Annual Percent Change	Average Annual Change	Average Annual Percent Change	Average Annual Change
	2021-2030		2031-2040		2041-2050	
Computer Occupations	0.4%	463	1.1%	1,536	1.2%	1,908
Mathematical Science Occupations	1.2%	71	1.5%	100	1.5%	120
Nursing, Psychiatric, and Home Health Aides	0.6%	389	1.4%	21	1.4%	23
Occupational Therapy and Physical Therapist Assistants and Aides	1.3%	69	2.0%	248	1.8%	334

Analysis: Clean Energy Occupations

Occupation	Minimum Education	On-the-Job Training	Skills Needed	Occupation Family	Maryland Employment 2018	Maryland Average Annual Wage	Maryland Projected Growth 2018-2028
Solar Photovoltaic Installers	HS/Equivalent	Moderate-term OTJ	Installation, Mechanical Knowledge, Building & Construction	Solar Photovoltaic Installers	160	\$49,470	54%
Wind Turbine Service Technicians	Postsecondary nondegree award	Long-term OTJ	Engineering & Technology, Mechanical Knowledge, Equipment Maintenance	Wind Turbine Service Technicians	<i>Unavailable</i>	\$56,230*	68%*
Solar Thermal Installers and Repairers	HS/Equivalent	Apprenticeship	Engineering & Technology, Mechanical Knowledge, Building & Construction	Plumbers, Pipefitters, and Steamfitters	8,920	\$57,520	11%
Solar Energy Systems Engineers/ Wind Energy Engineers	Bachelor's degree	None	Engineering & Technology, Physics, Design, Building & Construction,	Engineers, All Other	5,900	\$69,422	5%
Water/ Wastewater Engineers	Bachelor's degree	None	Engineering & Technology, Design, Building & Construction	Civil Engineers	1,960	\$81,210	12%
Solar Energy Installation Managers	HS/Equivalent	None	Engineering & Technology, Physics, Design, Building & Construction	First-Line Supvr. of Construction Trades/ Extraction Workers	15,850	\$72,189	5%

Analysis: Clean Energy Jobs Training Opportunities

The following are some of the clean energy job training programs available in Maryland:

- Power52 Energy Institute
- The Prince George's Community College Sustainable Energy and Workforce Development Program
- Montgomery College's Green Training and Technology
- Civic Works Center for Sustainable Careers Training Programs