



The Employment Impact of Curtailing Fossil Fuel Use

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Introduction

President Biden has indicated his intention to promote policies that radically reduce greenhouse gas emissions to limit damage to the environment from climate change. This implies a substantial reduction in the use of fossil fuels in the coming decades.

Cutbacks in the use of oil and natural gas will inevitably lead to job loss in these industries. This study projects the amount of displacement that can reasonably be anticipated. It breaks down these projections into the loss of jobs where skills can be readily transferred, (for example, accountants and salespeople) and the loss of jobs where the skills are largely industry specific (such as oil field roustabouts). The study also attempts to put this projected job loss in a context that makes it more meaningful. Specifically, it compares these projected annual losses to the jobs lost in manufacturing during the rise of the trade deficit between 2000 and 2007, and to the normal amount of job loss the economy sees in a day.

These comparisons show that even assuming an aggressive schedule of phasing out these fossil fuel industries over two decades, the annual job loss will be an order of magnitude smaller than the average number of jobs lost in manufacturing between each year between 2000 and 2007. The projected annual job loss will also be less than the number of workers that employers typically fire or lay off in a single day.



Calculating Job Loss from Curtailing Fossil Fuel Use

The starting point for these calculations is the number of people employed in the oil and gas industries in 2019. The year 2019 was selected instead of 2020 to avoid distortions from the extraordinary impact of the pandemic-related recession. The first column of **Table 1** shows total employment in the nine industries that are primarily involved in the drilling, processing, and distribution of oil and natural gas.

Table 1

Employment in the Fossil Fuel Industry

	Total Employment	Workers with Nontransferable Skills (percent)	
Oil and gas extraction	143,600	33.5	48,106
Support activities – for oil and gas operations	270,000	75.5	203,850
Oil and gas pipeline construction	171,300	81.1	138,924
Mining and oil and gas field machinery	69,600	61.7	42,943
Petroleum refineries – manufacturing	68,800	65.7	45,202
Petroleum merchant wholesalers	104,000	44.6	46,384
Pipeline transportation	51,500	63.1	32,497
Fossil fuel power generation	83,100	57.8	48,032
Natural gas distribution	110,100	44.1	48,554
<i>Total oil and gas</i>	1,072,000	61.1	654,492

Source: Bureau of Labor Statistics, Current Employment Situation.

The total number of workers employed in these industries in 2019 was 1,027,000, approximately 0.7 percent of total payroll employment in 2019.¹ (In 2020, employment in these industries dropped by 123,000 to 949,000.)

The next step is to determine the percentage of workers in each industry who had jobs with skills that were not transferable. The Bureau of Labor Statistics' National Employment Matrix-Industry has detailed data on the occupational breakdown for each industry. This series was used to determine which workers were likely to have skills that were largely industry-specific and which workers had skills that could probably be transferable to other sectors if they lost their jobs in the fossil fuel industry. The breakdown of occupations is

¹ These data are taken from the Bureau of Labor Statistics, Current Employment Situation, available at <https://www.bls.gov/data/#employment>.



shown in **Table 2**, which also indicates which occupations were treated as having transferable skills. (The appendix gives the basis for the calculation of the number of jobs with nontransferable skills in each industry.)

Table 2

Occupations in the Fossil Fuel Industry

(thousands)

	Employment
Management occupations	77,191
Business and financial operations occupations	71,621
Computer and mathematical operations	24,674
Architecture and engineering operations	63,048
Life, physical, and social science operations	24,799
Legal occupations	4,617
Arts, design, entertainment, sports, and media occupations	4,356
Protective service occupations	1,682
Building and grounds cleaning and maintenance occupations	2,633
Sales and related occupations	39,166
Office and administrative support occupations	102,347
Construction and extraction occupations	276,897
Installation, maintenance, and repair occupations	117,668
Production occupations	147,877
Transportation and material moving occupations	109,649
<i>Total nontransferable skills</i>	654,723

Source: Bureau of Labor Statistics, National Employment Matrix.

The breakdown between occupations treated as having transferable skills and those that do not largely falls along white-collar and blue-collar occupation categories. This breakdown is not exact, since there will be some white-collar occupations where skills may not be easily transferable. For example, a person who has worked as a salesperson in the fossil fuel industry for 20 years may find that their skills are not easily transferred to other sectors.

This also goes in the opposite direction. Many people employed in transportation occupations in the fossil fuel industry can likely find employment in transportation in other sectors if they lose their job in the fossil fuel industry. It is not that different driving a truck that carries parts for a pipeline than driving a truck that carries car parts or parts for windmills.

The breakdown in Table 2 shows that just over 655,000 of the jobs in the fossil fuel industry have nontransferable skills. By far, the largest category of workers with nontransferable skills



is in construction and extraction occupations, accounting for more than 40 percent of the total. Even in this category, there are occupations such as welders and electricians, which involve skills that can likely be transferred easily to other industries.

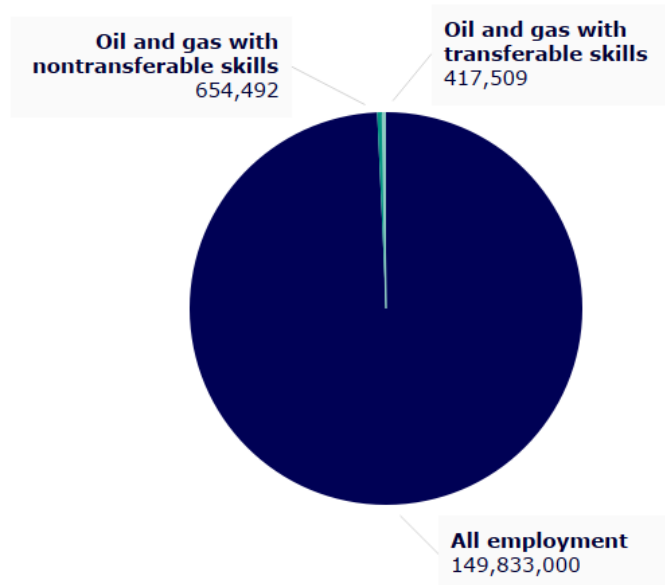


The Projected Rate of Job Loss

Employment in the oil and gas industries is not an especially large share of the economy. The 1,027,000 jobs in the industry in 2019 were less than 8.5 percent of the people employed in the restaurant industry in 2019. It was less than 6.6 percent of employment in the retail sector, and 6.3 percent of employment in health care. Relative to the economy as a whole, the jobs in the fossil fuel industry were less than 0.7 percent of total employment in 2019, with the jobs with nontransferable skills being 0.43 percent of total employment. This is shown in Figure 1.

Figure 1

Oil and Gas Employment as a Share of Total Employment



Source: Bureau of Labor Statistics, Current Employment Situation and author's calculations.

If the Biden administration moves aggressively towards shifting towards clean energy, the jobs in the fossil fuel industry will be eliminated over time. If fossil fuel consumption was largely eliminated over a 20-year period (an extreme scenario), it would imply a loss of an

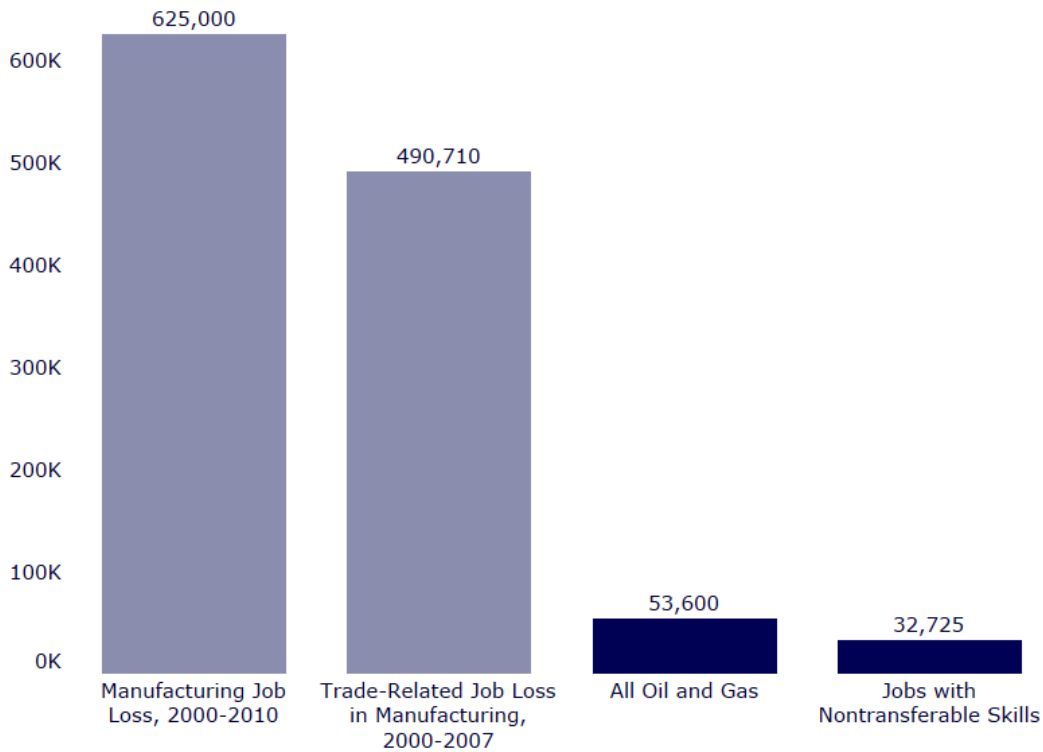
average of 53,600 jobs annually over this period. If the jobs with nontransferable skills were eliminated at the same pace, the loss would be 32,700 a year.

To get an idea of how large a disruption this rate of job loss is, it is worth comparing it to other sources of job loss. An obvious basis of comparison is the job loss in manufacturing that the United States experienced between 2000 and 2007, primarily due to the growth of the trade deficit. Over the seven years from December of 2000 to December of 2007, the country lost 3,435,000 manufacturing jobs, just under 20 percent of the total. This comes to an average job loss of 491,000 a year (see **Figure 2**).

The reason for selecting December of 2007 as an endpoint is that is the month the Great Recession started. In other words, this job loss in manufacturing is all pre-Great Recession. The economy lost another 2,293,000 manufacturing jobs by the trough of the Great Recession in February of 2010, for a total of 5,728,000 jobs. (1,346,000 Of these jobs were regained by February of 2020 before the pandemic hit.) If we looked at manufacturing job loss from December of 2000 to the Great Recession trough, the average pace would be 625,000 a year (see Figure 2).

Figure 2

Oil and Gas Employment as a Share of Total Employment



Source: Bureau of Labor Statistics, Current Employment Situation and author's calculations.

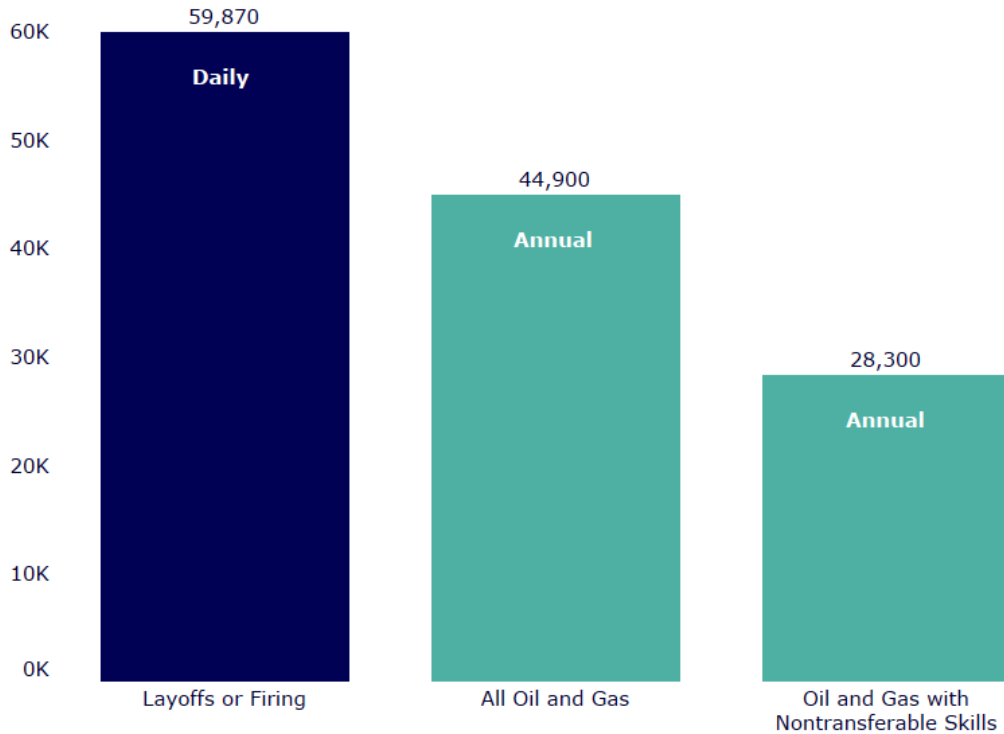
As can be seen in the comparisons in Figure 2, the annual job loss in manufacturing over the years 2000 to 2007 was almost 10 times as large as the projected job loss in the oil and gas industries, if they are phased out over 20 years. The rate of job loss from 2000 to the trough of the Great Recession was more than 12 times as large. If we use the rate of loss of jobs with nontransferable skills as the base of comparison, the annual rate of job loss in manufacturing from 2000 to the 2010 trough of the recession was almost 20 times as large.

Another useful base of comparison is the number of people who reported losing their job through either layoffs or firings every month. The Bureau of Labor Statistics Job Opening and Labor Turnover Survey (JOLTS) provides monthly data on the number of people who lose their job either through layoff or firing. In 2019, a total of 21,850,000 workers were either laid off or fired. This comes to an average of just under 60,000 workers a day. This daily rate of job loss is more than 10 percent higher than the annual rate of projected job loss in the fossil fuel industry. It is more than 80 percent higher than the annual rate of job loss of jobs with nontransferable skills. This comparison is shown in **Figure 3**.



Figure 3

Projected Annual Job Loss in Fossil Fuel Industries Compared to Daily Job Loss Due to Layoffs or Firing



Source: Bureau of Labor Statistics, Current Employment Situation and author's calculations.

There are three reasons why the figures above could overstate the size of the job loss resulting from an aggressive move away from fossil fuels. The first reason is the assumption of a 20-year phaseout period is a very ambitious pace for reducing greenhouse gas emissions. While a rapid phaseout is desirable from the standpoint of limiting the damage from climate change, it is likely that it will take longer than 20 years to move the country away from fossil fuels. If we assume, for example, that a phase out takes place over 30 years, then the annual rate of job loss would be one-third less than the numbers shown in Figures 1-3.

The second reason is that 2019 was chosen as the base year to exclude the impact of the pandemic recession. In 2020, employment in fossil fuel industries fell by 123,000 to 949,000. While some of these jobs will come back as the economy moves out of recession in 2021, it is likely that many will not. If 2020 was used as the basis for comparisons then the annual job loss would be 11.5 percent smaller than the numbers shown in Figures 1-3. If we assumed that half the jobs lost in the pandemic recession come back, then the annual job loss



would be 5.8 percent less than indicated in these figures. That would translate into an annual job loss of 47,400 industry jobs overall, and 29,000 jobs with nontransferable skills.

The final reason is a question of how we think about the job loss implied by these calculations. There are a large number of people who leave their jobs voluntarily. According to the JOLTS data cited above, in 2019, 25.5 percent of workers quit their jobs voluntarily. In the mining industry, the figure was 24.6 percent.² (Some workers left more than one job over the course of the year, so these figures would count some individuals more than once.)

People choose to leave their jobs for a wide variety of reasons. Some may change jobs within the industry. Others may look to leave the industry altogether. Some workers get injured on the job and may have to look for work in a different industry for this reason. And, workers retire. If workers in the oil and gas industry have 30-year careers on average, that would mean 3.3 percent retire in a normal year. If the industry is shedding 5 percent of its jobs each year over a 20-year period, that would not be much faster than the pace at which workers retire.

This does not mean that the job loss from a 20-year phaseout of fossil fuel use can be entirely met by retirements without any workers being laid off. There will invariably be cases where a refinery or power plant is closed, and all the workers are laid off, which will almost certainly include many workers who are not ready for retirement.

But this calculation does give us some perspective on the size of the prospective job loss from phasing out fossil fuel consumption. It should be possible to meet most of the loss of jobs in the sector through retirements and other voluntary quits. The workers who are laid off due to cutbacks will be the exception.

² The Bureau of Labor Statistics does not make public JOLTS data for more narrowly defined industries.

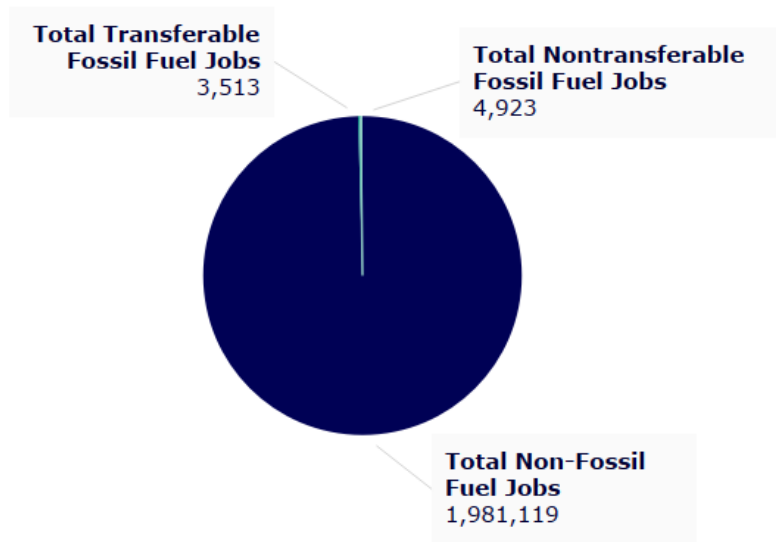
State Level Data

The next section shows the potential impact of a 20-year phaseout of fossil fuel use for each of the 50 states and the District of Columbia. It applies the same methodology for each state as for the national data, relying on the Quarterly Census of Employment and Earnings for state level employment in each industry.

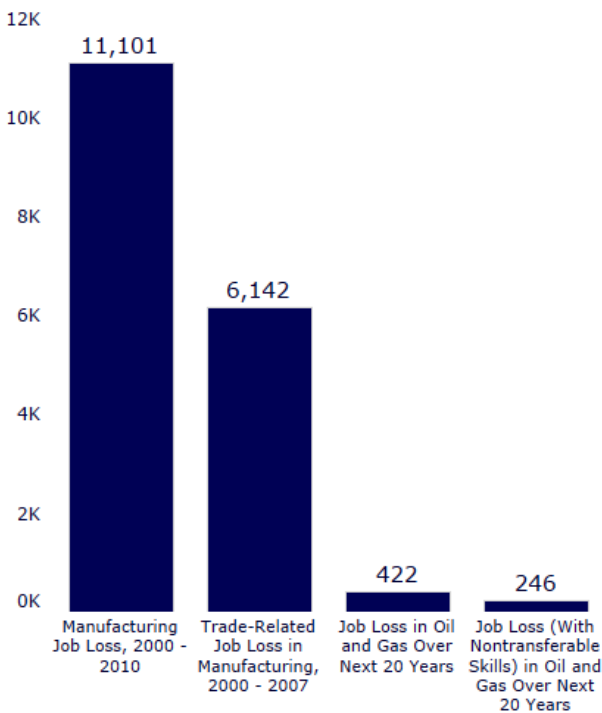
The state level calculations apply the same percentage for the number of workers with nontransferable skills in each industry as the national calculations since the data on the occupational mix is not available at the state level. There clearly will be some difference in the occupational mix by state, but the national mix should provide a reasonable approximation. The state level calculations use the actual loss of manufacturing jobs in the state from January 2002 to both December 2007 and February 2010, as a basis for comparison with the projected job loss in the fossil fuel industry.

The daily job loss calculated due to layoffs and firing is calculated a percentage of average employment in the state in 2019 based on the national JOLTS data. These data are not publicly available at the state level.

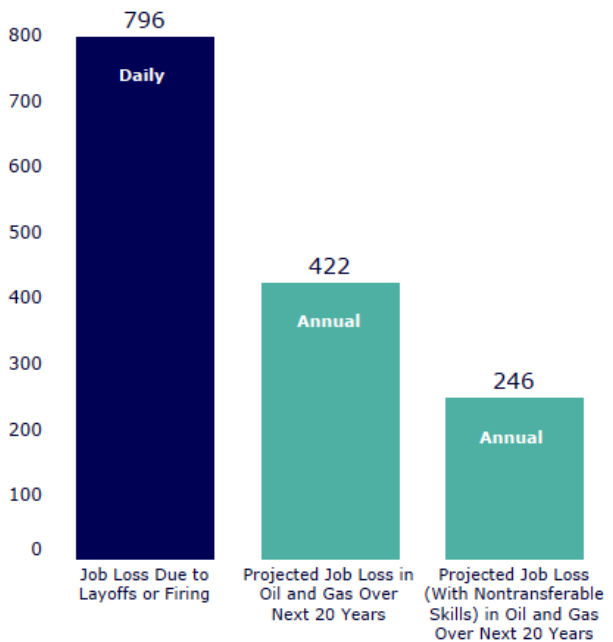
Employment Breakdown



Alabama Annual Job Loss in Manufacturing vs Fossil Fuel Industries



Alabama Projected Annual Job Loss in the Fossil Fuel Industry Compared to Daily Job Loss Due to Layoffs or Firing



Source and Notes: 2019 Quarterly Census on Employment and Wages.

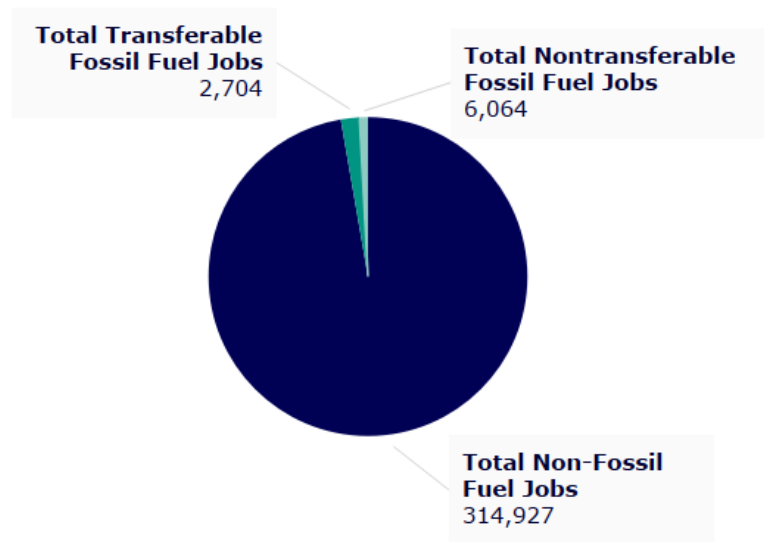


Alabama

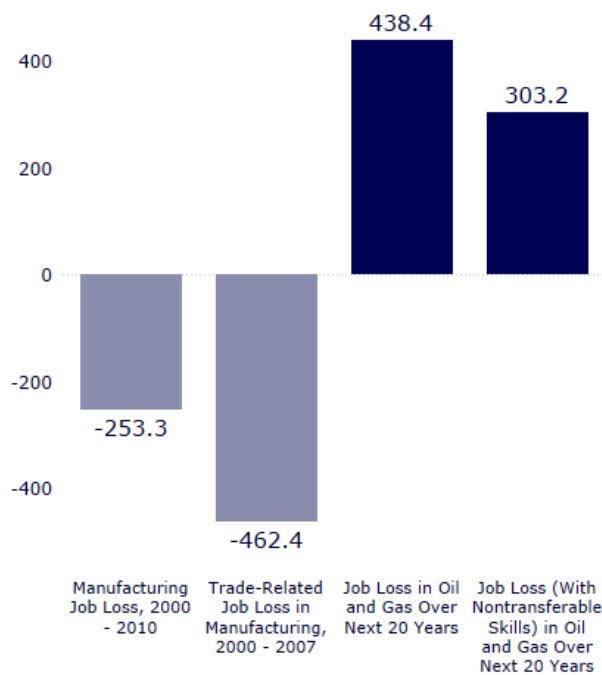
Fossil Fuel Industry	Employment	Nontransferable Jobs (percent)	
Drilling Oil and Gas wells	109	33.5	37
Support Activities for Oil and Gas Operations	537	75.5	405
Natural Gas Distribution	1,376	44.1	330
Oil and Gas Pipeline Construction	1,190	81.1	1,325
Petroleum Refineries	659	65.7	433
Mining and Oil and Gas Field Machinery	281	59.2	607
Petroleum Merchant Wholesalers	1,468	44.6	166
Pipeline Transportation of Crude Oil	-	63.1	-
Pipeline Transportation of Natural Gas	523	63.1	965

Source and notes: 2019 Quarterly Census on Employment and Wages

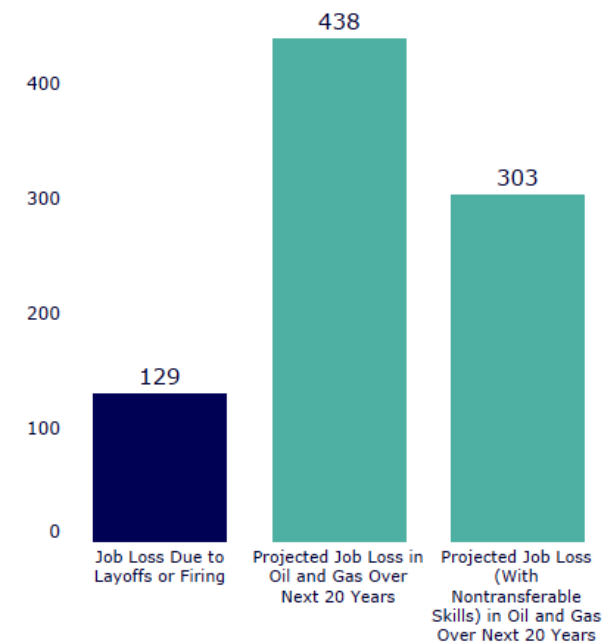




Alaska Annual Job Loss in Manufacturing vs Fossil Fuel Industries



Alaska Projected Annual Job Loss in the Fossil Fuel Industry Compared to Daily Job Loss Due to Layoffs or Firing



Source and Notes: 2019 Quarterly Census on Employment and Wages.

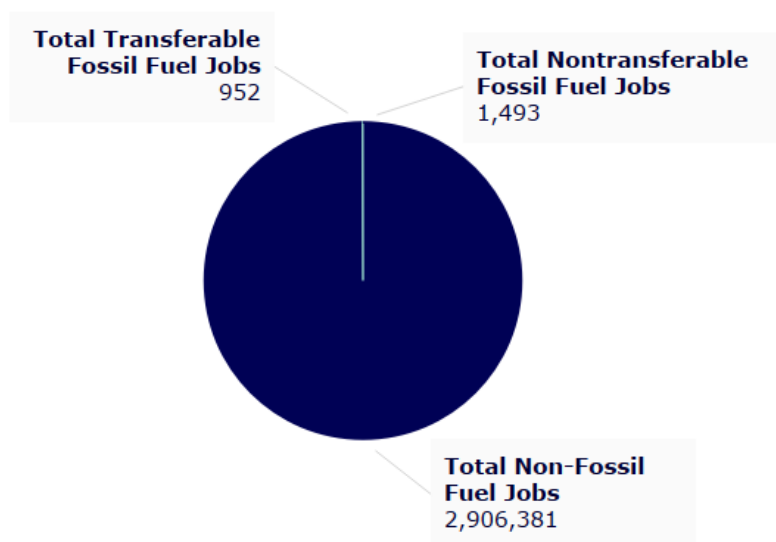
Alaska

Fossil Fuel Industry	Employment	Nontransferable Jobs (percent)	
Drilling Oil and Gas wells	637	33.5	213
Support Activities for Oil and Gas Operations	5715	75.5	4315
Natural Gas Distribution	296	44.1	0
Oil and Gas Pipeline Construction	1119	81.1	225
Petroleum Refineries	0	65.7	0
Mining and Oil and Gas Field Machinery	0	59.2	131
Petroleum Merchant Wholesalers	612	44.6	0
Pipeline Transportation of Crude Oil	0	63.1	0
Pipeline Transportation of Natural Gas	0	63.1	908

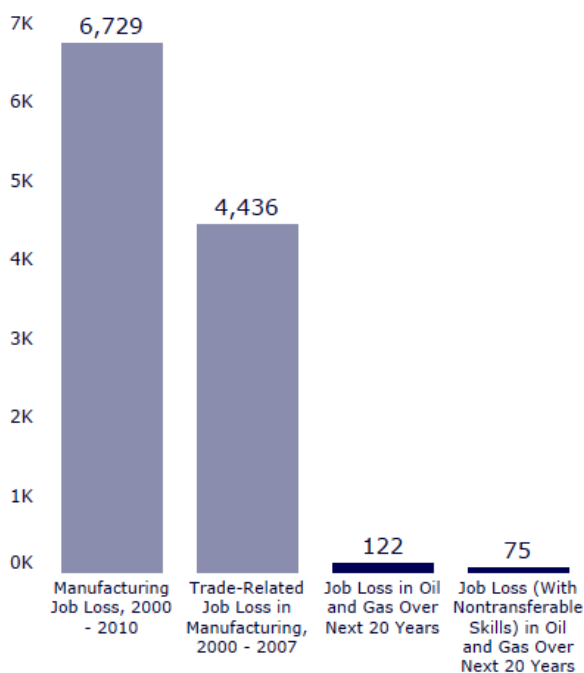
Source and notes: 2019 Quarterly Census on Employment and Wages



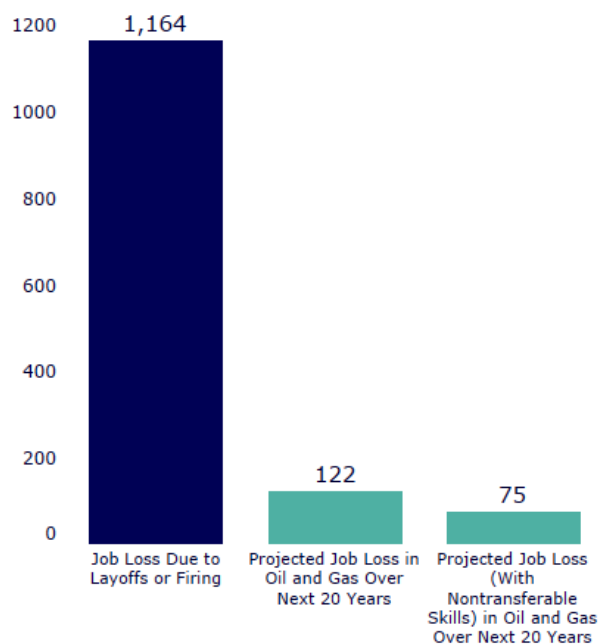
Employment Breakdown



Arizona Annual Job Loss in Manufacturing vs Fossil Fuel Industries



Arizona Projected Annual Job Loss in the Fossil Fuel Industry Compared to Daily Job Loss Due to Layoffs or Firing



Source and Notes: 2019 Quarterly Census on Employment and Wages.



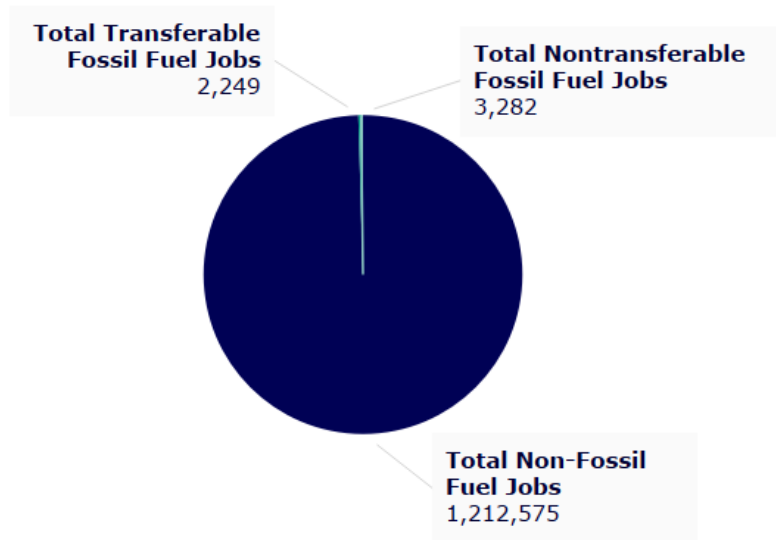
Arizona

Fossil Fuel Industry	Employment	Nontransferable Jobs (percent)	
Drilling Oil and Gas wells	138	33.5	46
Support Activities for Oil and Gas Operations	63	75.5	48
Natural Gas Distribution	0	44.1	0
Oil and Gas Pipeline Construction	1082	81.1	0
Petroleum Refineries	14	65.7	9
Mining and Oil and Gas Field Machinery	0	59.2	0
Petroleum Merchant Wholesalers	1148	44.6	0
Pipeline Transportation of Crude Oil	0	63.1	0
Pipeline Transportation of Natural Gas	0	63.1	878

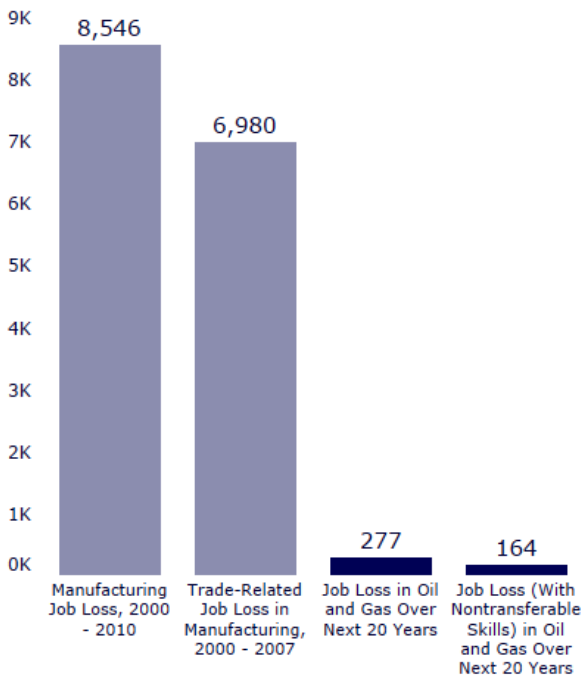
Source and notes: 2019 Quarterly Census on Employment and Wages



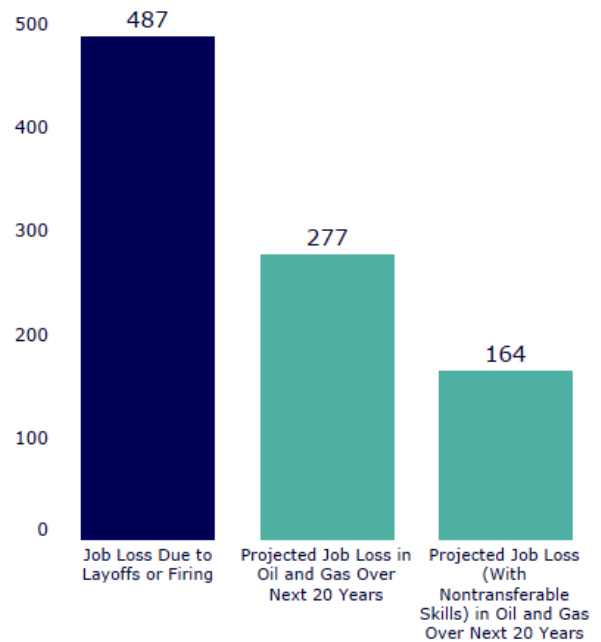
Employment Breakdown



Arkansas Annual Job Loss in Manufacturing vs Fossil Fuel Industries



Arkansas Projected Annual Job Loss in the Fossil Fuel Industry Compared to Daily Job Loss Due to Layoffs or Firing



Source and Notes: 2019 Quarterly Census on Employment and Wages.



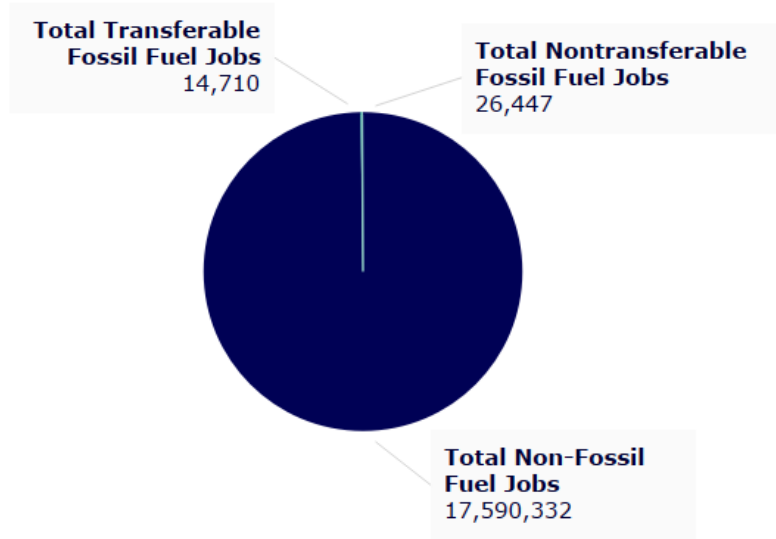
Arkansas

Fossil Fuel Industry	Employment	Nontransferable Jobs (percent)	
Drilling Oil and Gas wells	217	33.5	73
Support Activities for Oil and Gas Operations	1091	75.5	824
Natural Gas Distribution	1021	44.1	115
Oil and Gas Pipeline Construction	790	81.1	301
Petroleum Refineries	550	65.7	361
Mining and Oil and Gas Field Machinery	0	59.2	450
Petroleum Merchant Wholesalers	1159	44.6	0
Pipeline Transportation of Crude Oil	0	63.1	0
Pipeline Transportation of Natural Gas	182	63.1	641

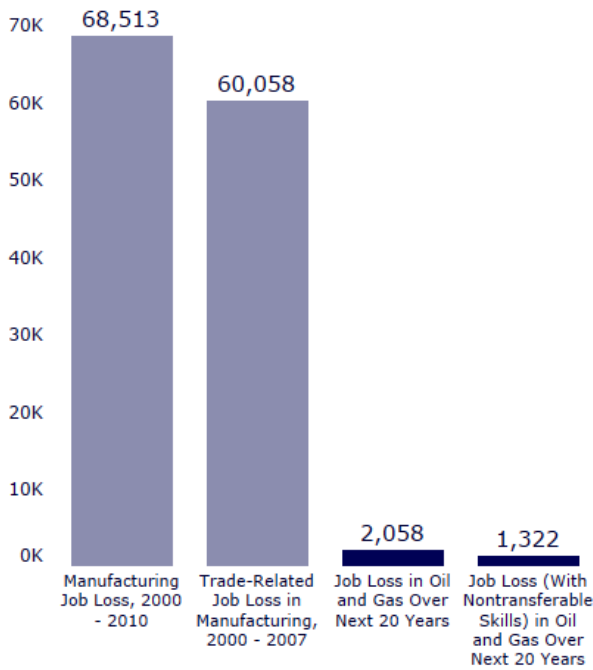
Source and notes: 2019 Quarterly Census on Employment and Wages



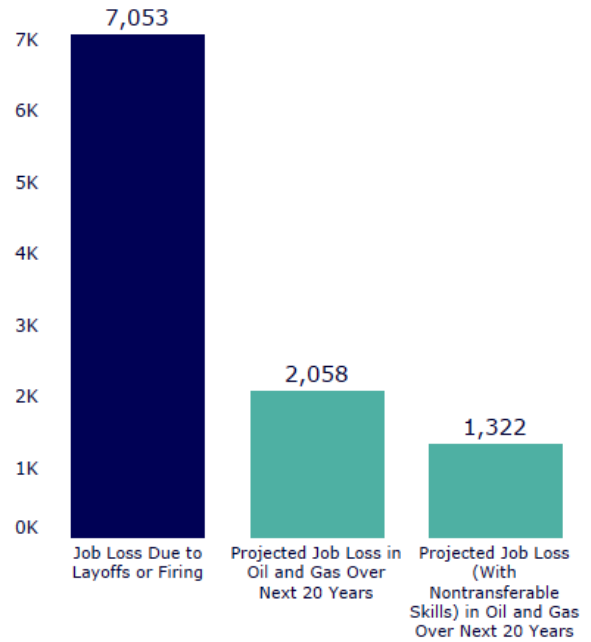
Employment Breakdown



California Annual Job Loss in Manufacturing vs Fossil Fuel Industries



California Projected Annual Job Loss in the Fossil Fuel Industry Compared to Daily Job Loss Due to Layoffs or Firing



Source and Notes: 2019 Quarterly Census on Employment and Wages.

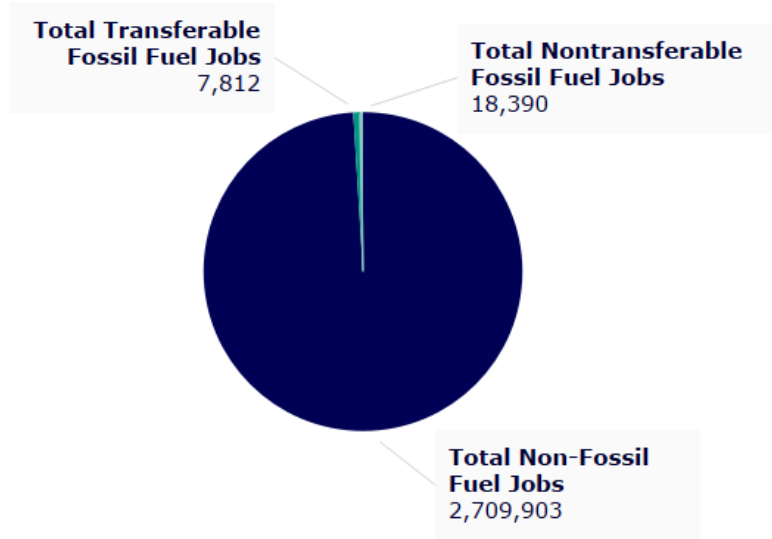
California

Fossil Fuel Industry	Employment	Nontransferable Jobs (percent)	
Drilling Oil and Gas wells	3025	33.5	1013
Support Activities for Oil and Gas Operations	6797	75.5	5132
Natural Gas Distribution	0	44.1	246
Oil and Gas Pipeline Construction	10016	81.1	0
Petroleum Refineries	10839	65.7	7121
Mining and Oil and Gas Field Machinery	1492	59.2	0
Petroleum Merchant Wholesalers	8090	44.6	883
Pipeline Transportation of Crude Oil	508	63.1	321
Pipeline Transportation of Natural Gas	390	63.1	8123

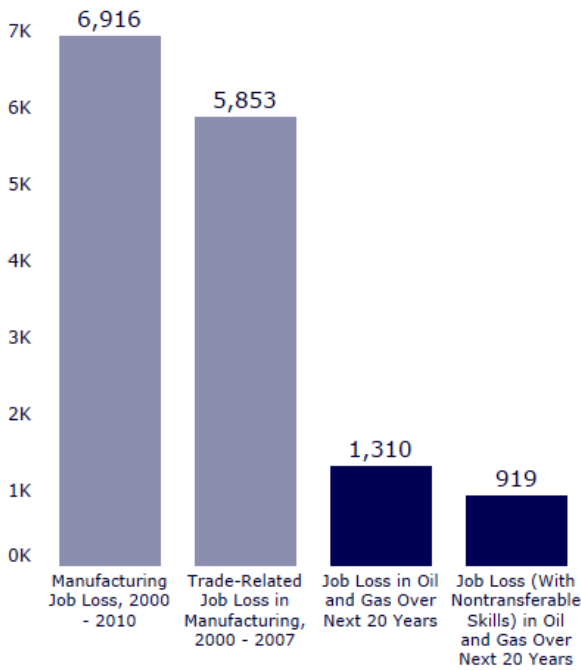
Source and notes: 2019 Quarterly Census on Employment and Wages



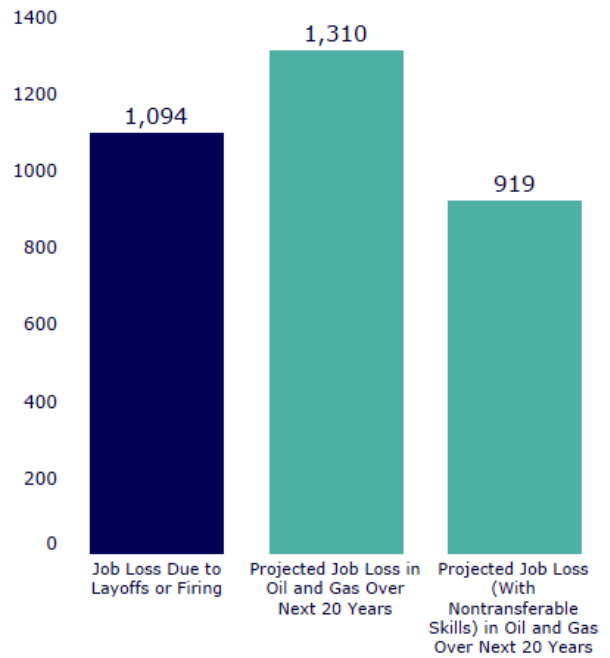
Employment Breakdown



Colorado Annual Job Loss in Manufacturing vs Fossil Fuel Industries



Colorado Projected Annual Job Loss in the Fossil Fuel Industry Compared to Daily Job Loss Due to Layoffs or Firing



Source and Notes: 2019 Quarterly Census on Employment and Wages.

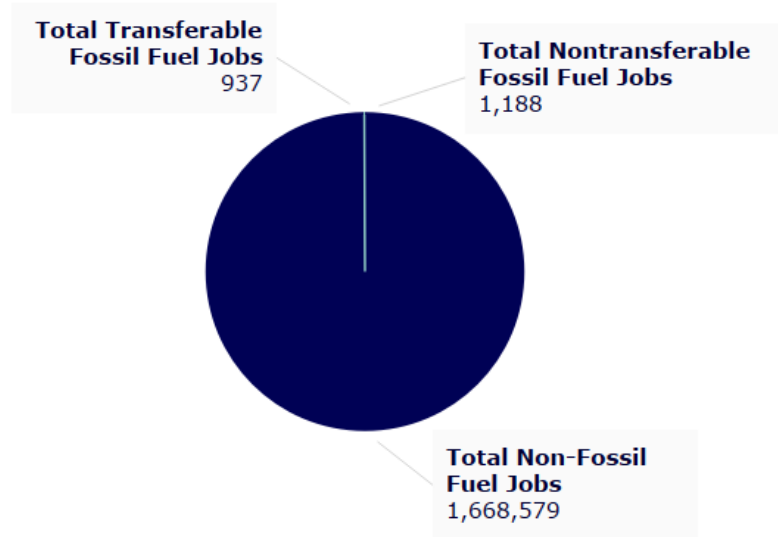


Colorado

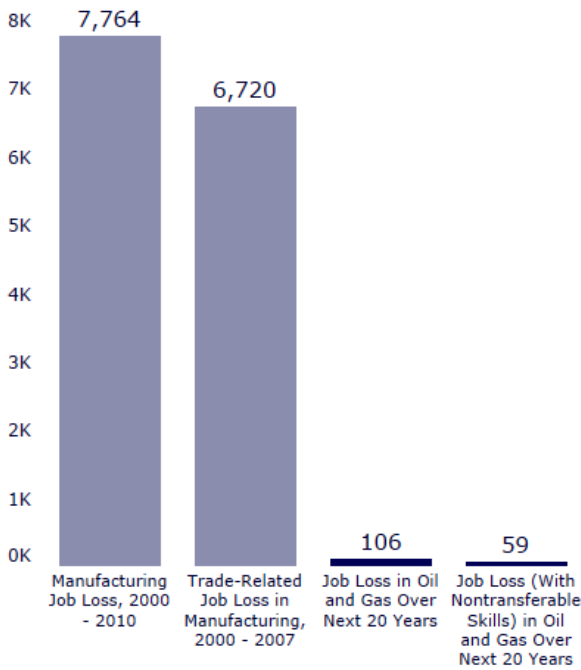
Fossil Fuel Industry	Employment	Nontransferable Jobs (percent)	
Drilling Oil and Gas wells	1572	33.5	527
Support Activities for Oil and Gas Operations	13441	75.5	10148
Natural Gas Distribution	900	44.1	789
Oil and Gas Pipeline Construction	6473	81.1	307
Petroleum Refineries	0	65.7	0
Mining and Oil and Gas Field Machinery	371	59.2	397
Petroleum Merchant Wholesalers	1603	44.6	220
Pipeline Transportation of Crude Oil	60	63.1	38
Pipeline Transportation of Natural Gas	1250	63.1	5250

Source and notes: 2019 Quarterly Census on Employment and Wages

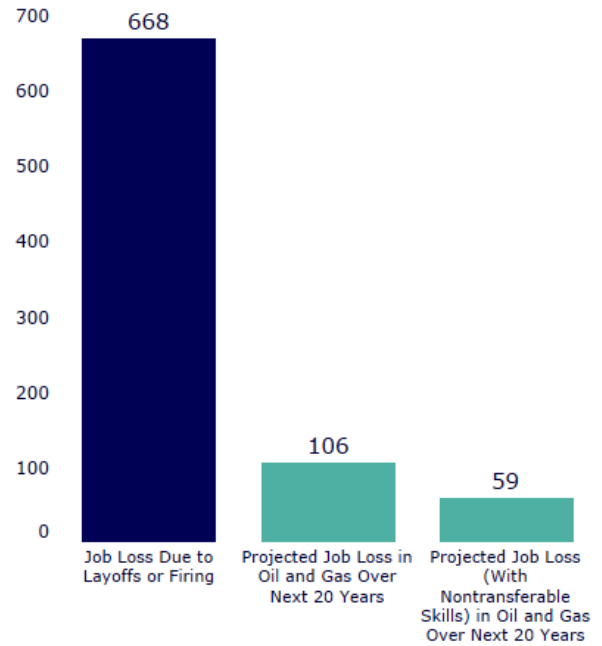




Connecticut Annual Job Loss in Manufacturing vs Fossil Fuel Industries



Connecticut Projected Annual Job Loss in the Fossil Fuel Industry Compared to Daily Job Loss Due to Layoffs or Firing



Source and Notes: 2019 Quarterly Census on Employment and Wages.

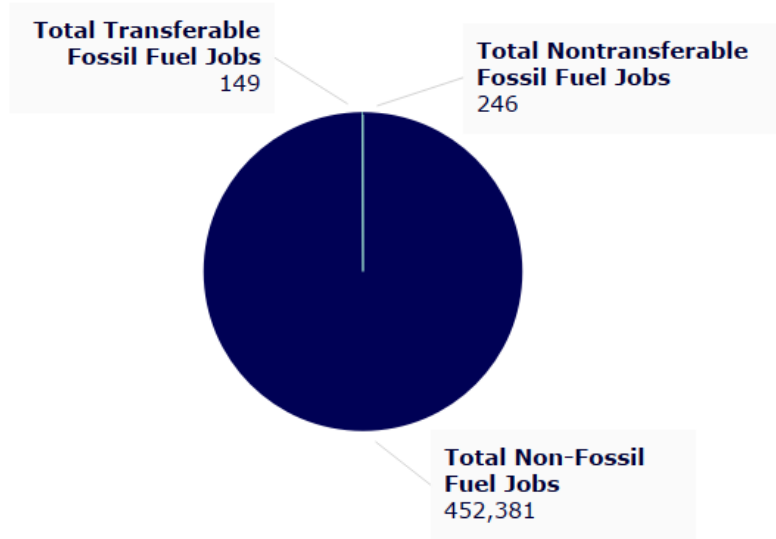
Connecticut

Fossil Fuel Industry	Employment	Nontransferable Jobs (percent)	
Drilling Oil and Gas wells	0	33.5	0
Support Activities for Oil and Gas Operations	8	75.5	6
Natural Gas Distribution	739	44.1	0
Oil and Gas Pipeline Construction	523	81.1	223
Petroleum Refineries	0	65.7	0
Mining and Oil and Gas Field Machinery	0	59.2	326
Petroleum Merchant Wholesalers	470	44.6	0
Pipeline Transportation of Crude Oil	0	63.1	0
Pipeline Transportation of Natural Gas	0	63.1	424

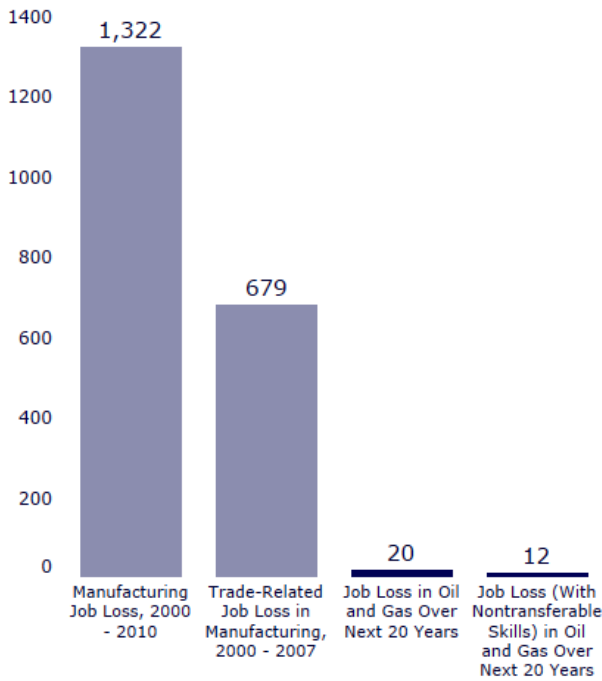
Source and notes: 2019 Quarterly Census on Employment and Wages



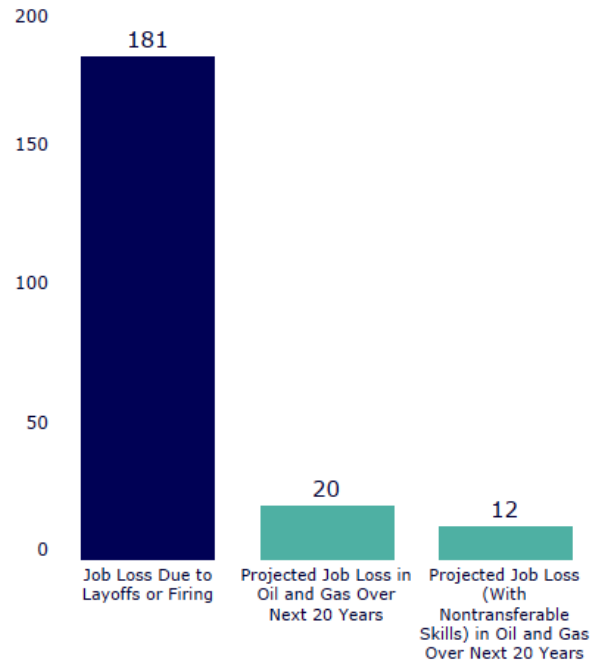
Employment Breakdown



Delaware Annual Job Loss in Manufacturing vs Fossil Fuel Industries



Delaware Projected Annual Job Loss in the Fossil Fuel Industry Compared to Daily Job Loss Due to Layoffs or Firing



Source and Notes: 2019 Quarterly Census on Employment and Wages.



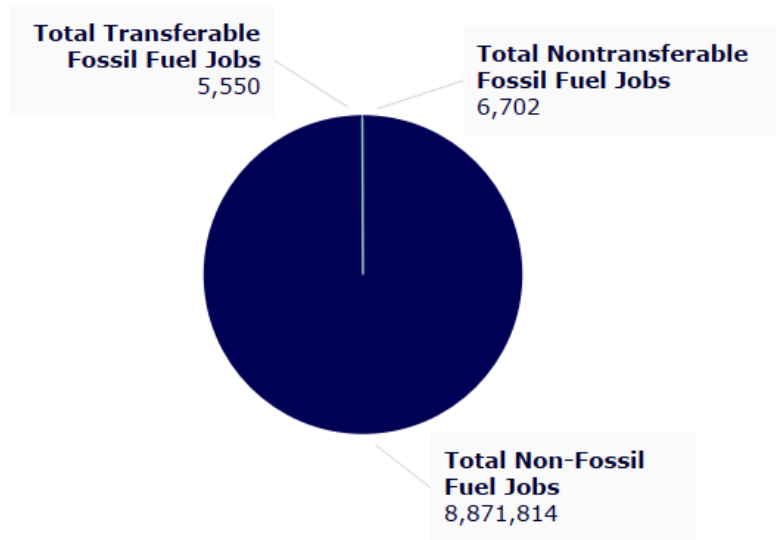
Delaware

Fossil Fuel Industry	Employment	Nontransferable Jobs (percent)	
Drilling Oil and Gas wells	0	33.5	0
Support Activities for Oil and Gas Operations	0	75.5	0
Natural Gas Distribution	0	44.1	0
Oil and Gas Pipeline Construction	192	81.1	0
Petroleum Refineries	0	65.7	0
Mining and Oil and Gas Field Machinery	0	59.2	0
Petroleum Merchant Wholesalers	203	44.6	0
Pipeline Transportation of Crude Oil	0	63.1	0
Pipeline Transportation of Natural Gas	0	63.1	156

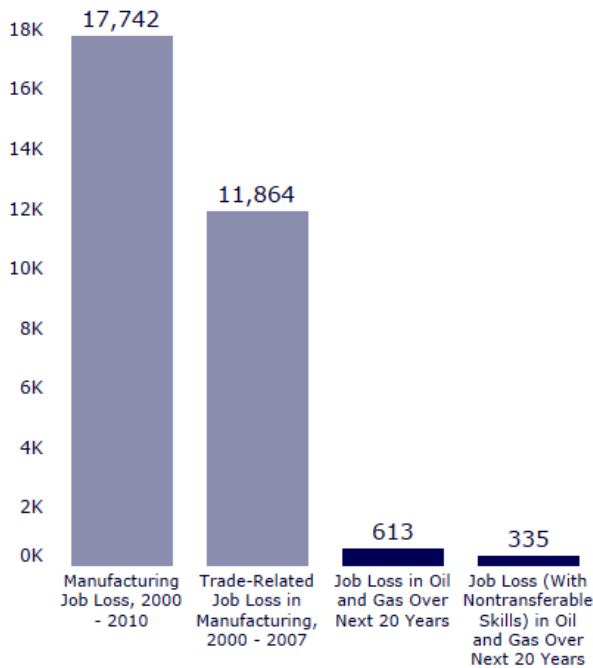
Source and notes: 2019 Quarterly Census on Employment and Wages



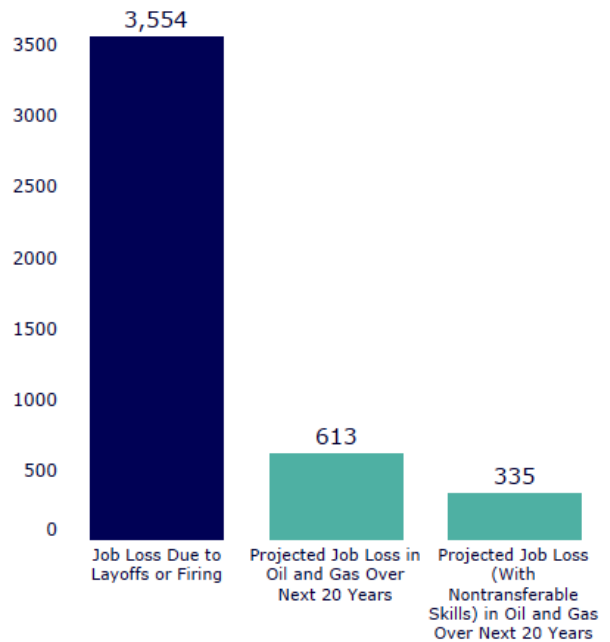
Employment Breakdown



Florida Annual Job Loss in Manufacturing vs Fossil Fuel Industries



Florida Projected Annual Job Loss in the Fossil Fuel Industry Compared to Daily Job Loss Due to Layoffs or Firing



Source and Notes: 2019 Quarterly Census on Employment and Wages.

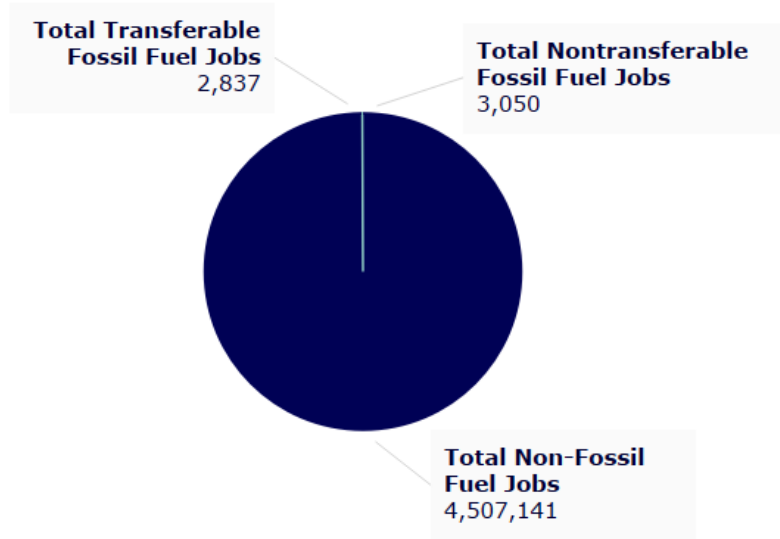


Florida

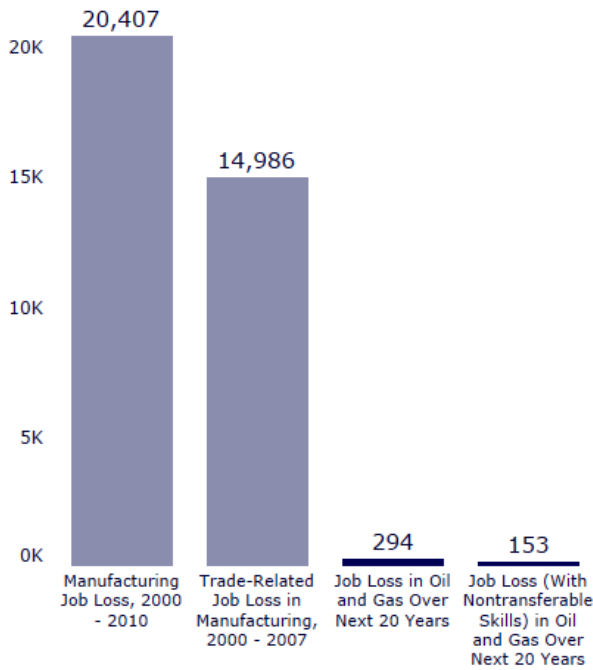
Fossil Fuel Industry	Employment	Nontransferable Jobs (percent)	
Drilling Oil and Gas wells	172	33.5	58
Support Activities for Oil and Gas Operations	226	75.5	171
Natural Gas Distribution	1556	44.1	128
Oil and Gas Pipeline Construction	1189	81.1	2819
Petroleum Refineries	72	65.7	47
Mining and Oil and Gas Field Machinery	401	59.2	686
Petroleum Merchant Wholesalers	3524	44.6	237
Pipeline Transportation of Crude Oil	31	63.1	20
Pipeline Transportation of Natural Gas	203	63.1	964

Source and notes: 2019 Quarterly Census on Employment and Wages

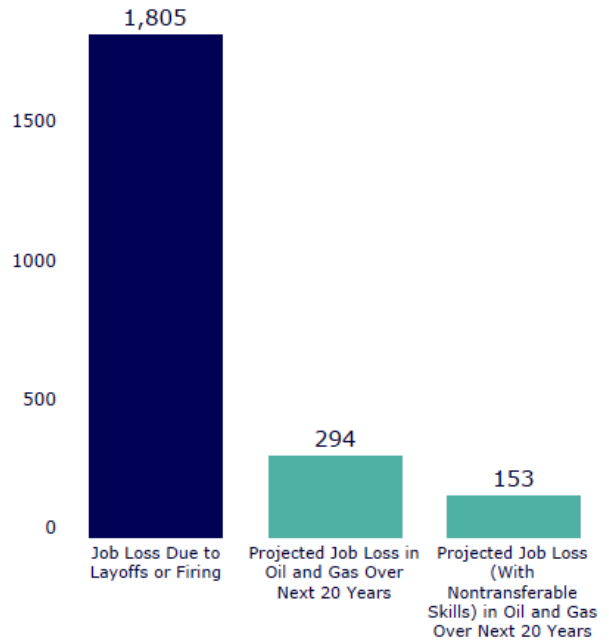




Georgia Annual Job Loss in Manufacturing vs Fossil Fuel Industries



Georgia Projected Annual Job Loss in the Fossil Fuel Industry Compared to Daily Job Loss Due to Layoffs or Firing



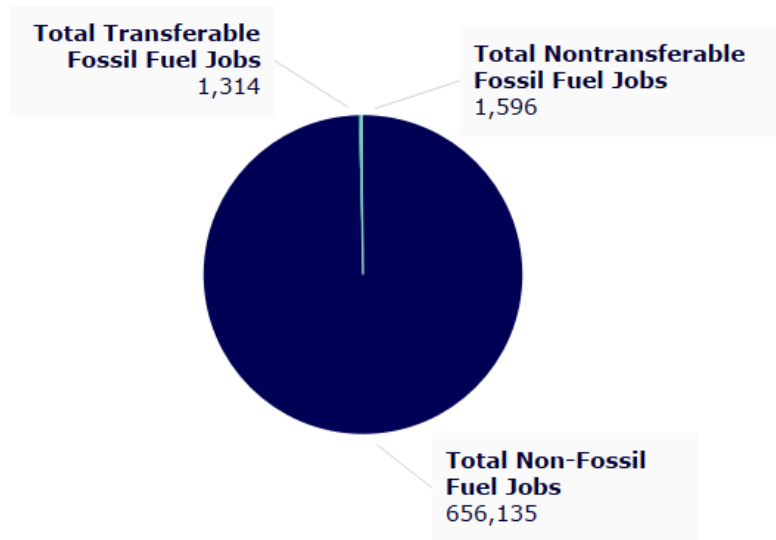
Source and Notes: 2019 Quarterly Census on Employment and Wages.

Georgia

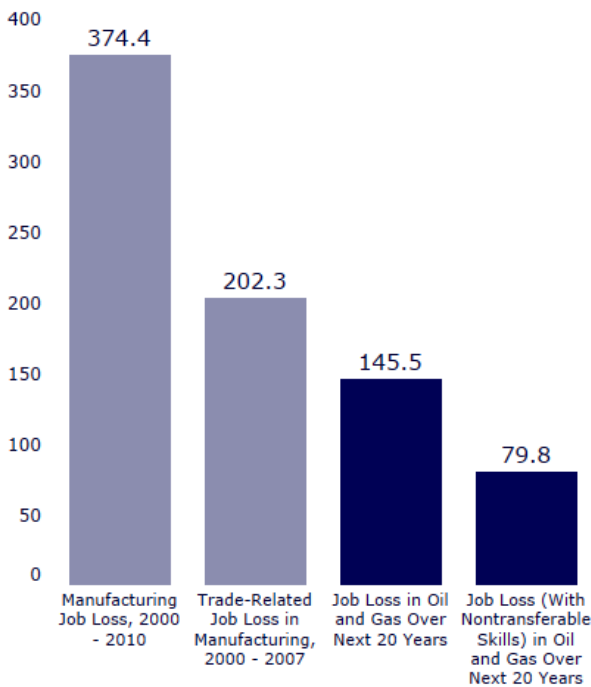
Fossil Fuel Industry	Employment	Nontransferable Jobs (percent)	
Drilling Oil and Gas wells	0	33.5	0
Support Activities for Oil and Gas Operations	111	75.5	84
Natural Gas Distribution	1982	44.1	0
Oil and Gas Pipeline Construction	1002	81.1	69
Petroleum Refineries	88	65.7	58
Mining and Oil and Gas Field Machinery	0	59.2	874
Petroleum Merchant Wholesalers	2584	44.6	0
Pipeline Transportation of Crude Oil	0	63.1	0
Pipeline Transportation of Natural Gas	0	63.1	813

Source and notes: 2019 Quarterly Census on Employment and Wages

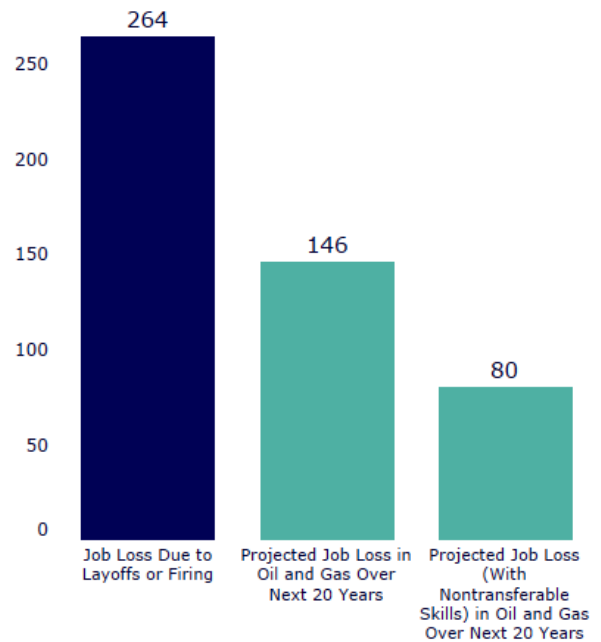
Employment Breakdown



Hawaii Annual Job Loss in Manufacturing vs Fossil Fuel Industries



Hawaii Projected Annual Job Loss in the Fossil Fuel Industry Compared to Daily Job Loss Due to Layoffs or Firing



Source and Notes: 2019 Quarterly Census on Employment and Wages.

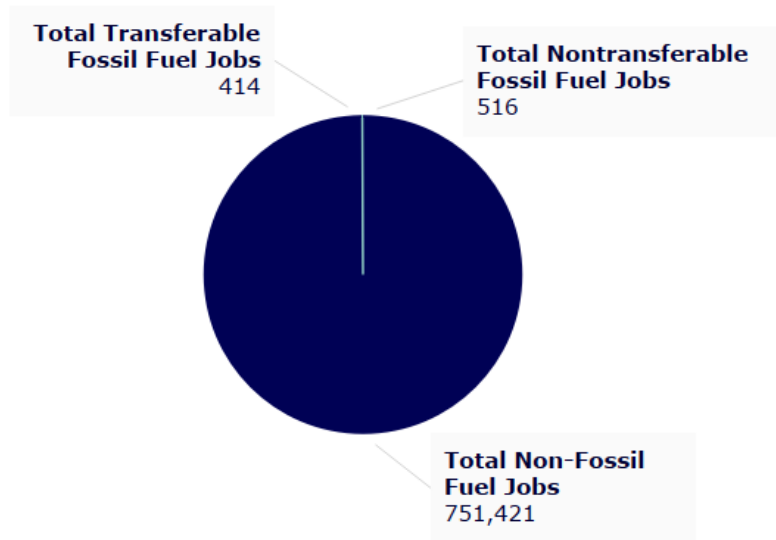


Hawaii

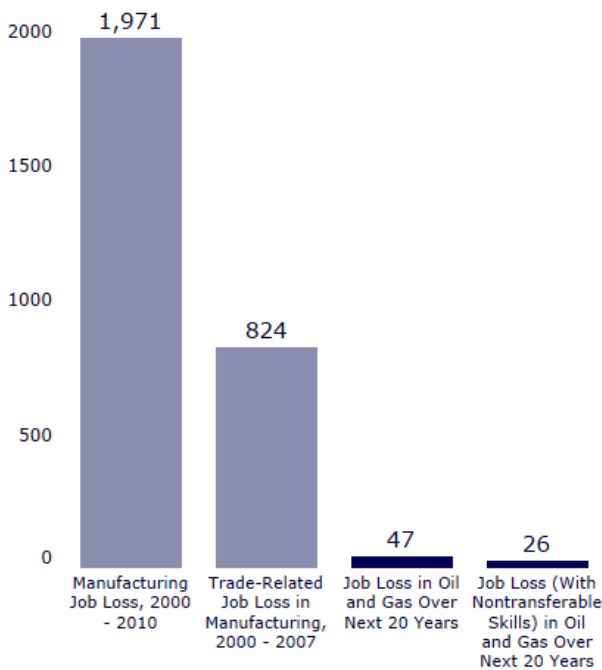
Fossil Fuel Industry	Employment	Nontransferable Jobs (percent)	
Drilling Oil and Gas wells	0	33.5	0
Support Activities for Oil and Gas Operations	0	75.5	0
Natural Gas Distribution	0	44.1	0
Oil and Gas Pipeline Construction	81	81.1	1177
Petroleum Refineries	0	65.7	0
Mining and Oil and Gas Field Machinery	0	59.2	0
Petroleum Merchant Wholesalers	792	44.6	0
Pipeline Transportation of Crude Oil	0	63.1	0
Pipeline Transportation of Natural Gas	0	63.1	66

Source and notes: 2019 Quarterly Census on Employment and Wages

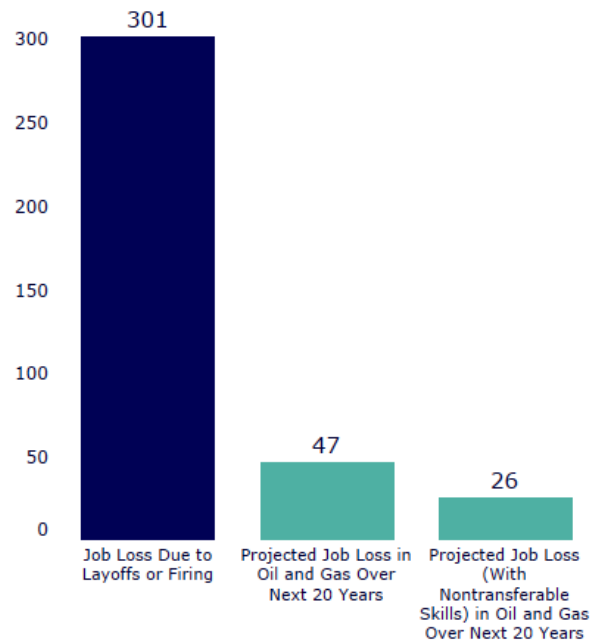
Employment Breakdown



Idaho Annual Job Loss in Manufacturing vs Fossil Fuel Industries



Idaho Projected Annual Job Loss in the Fossil Fuel Industry Compared to Daily Job Loss Due to Layoffs or Firing



Source and Notes: 2019 Quarterly Census on Employment and Wages.

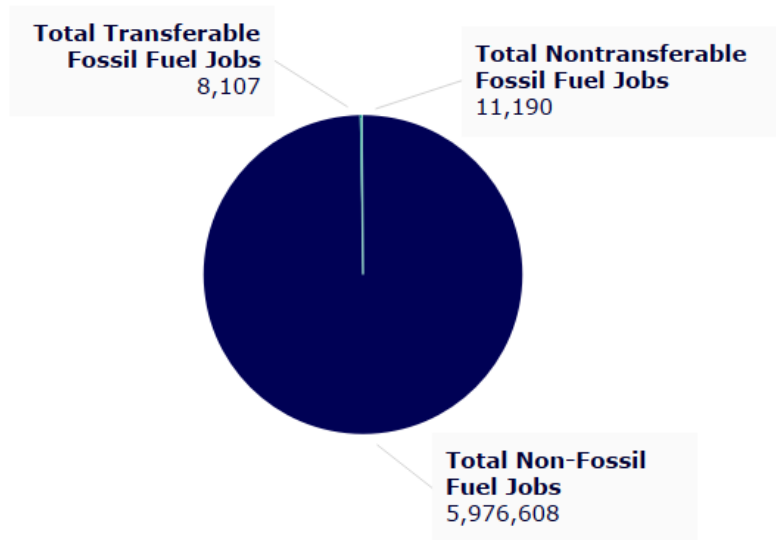


Idaho

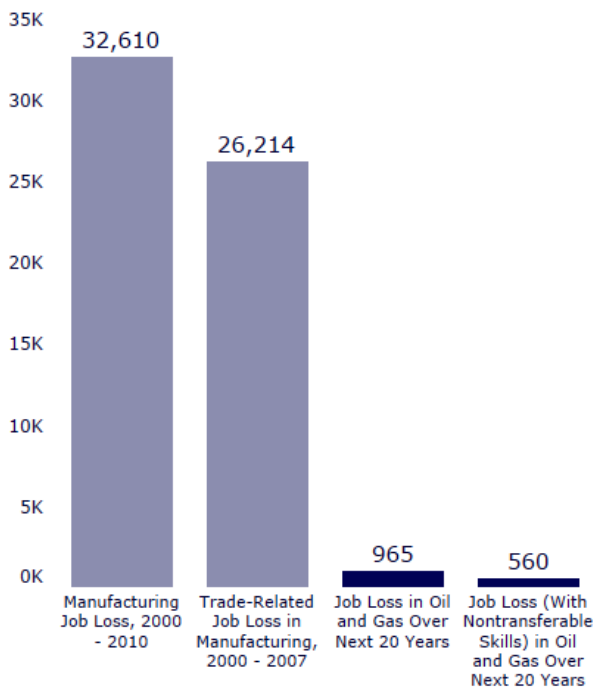
Fossil Fuel Industry	Employment	Nontransferable Jobs (percent)	
Drilling Oil and Gas wells	0	33.5	0
Support Activities for Oil and Gas Operations	59	75.5	45
Natural Gas Distribution	0	44.1	0
Oil and Gas Pipeline Construction	193	81.1	0
Petroleum Refineries	0	65.7	0
Mining and Oil and Gas Field Machinery	85	59.2	0
Petroleum Merchant Wholesalers	593	44.6	50
Pipeline Transportation of Crude Oil	0	63.1	0
Pipeline Transportation of Natural Gas	0	63.1	157

Source and notes: 2019 Quarterly Census on Employment and Wages

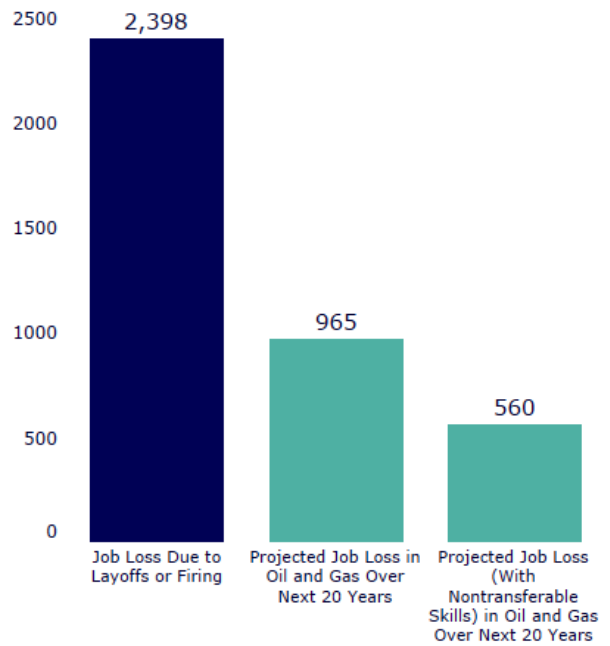




Illinois Annual Job Loss in Manufacturing vs Fossil Fuel Industries



Illinois Projected Annual Job Loss in the Fossil Fuel Industry Compared to Daily Job Loss Due to Layoffs or Firing



Source and Notes: 2019 Quarterly Census on Employment and Wages.

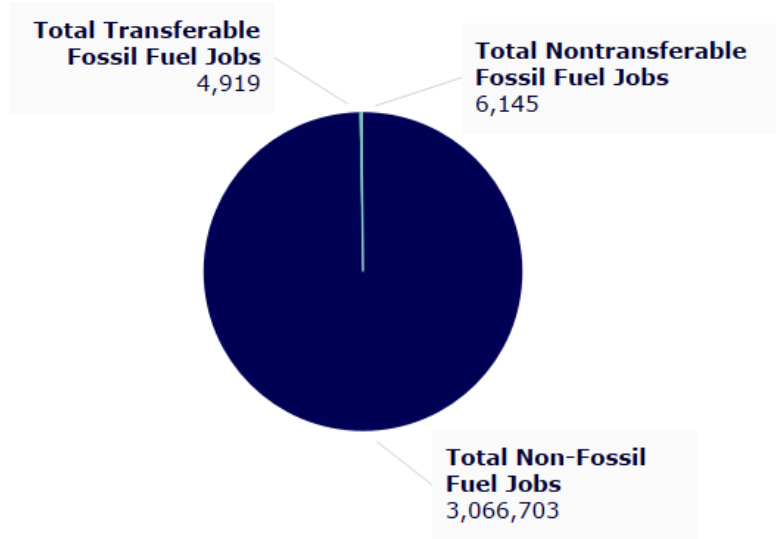
Illinois

Fossil Fuel Industry	Employment	Nontransferable Jobs (percent)	
Drilling Oil and Gas wells	241	33.5	81
Support Activities for Oil and Gas Operations	1032	75.5	779
Natural Gas Distribution	4405	44.1	0
Oil and Gas Pipeline Construction	3077	81.1	1584
Petroleum Refineries	2961	65.7	1945
Mining and Oil and Gas Field Machinery	799	59.2	1943
Petroleum Merchant Wholesalers	3570	44.6	473
Pipeline Transportation of Crude Oil	472	63.1	298
Pipeline Transportation of Natural Gas	0	63.1	2495

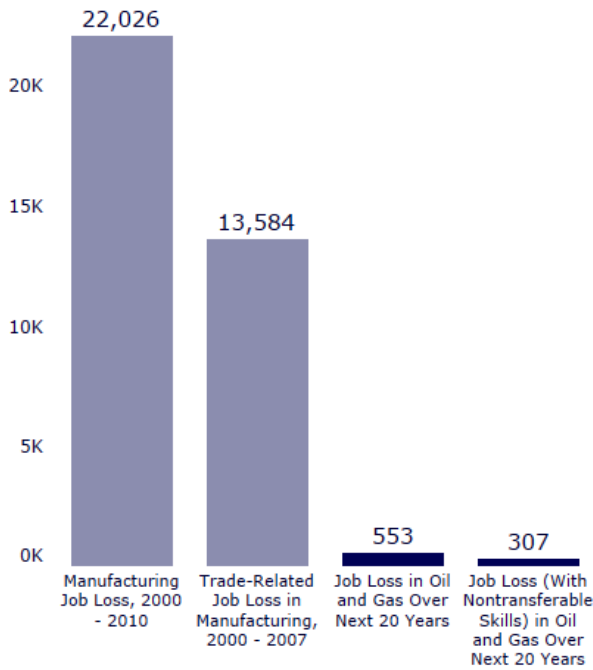
Source and notes: 2019 Quarterly Census on Employment and Wages



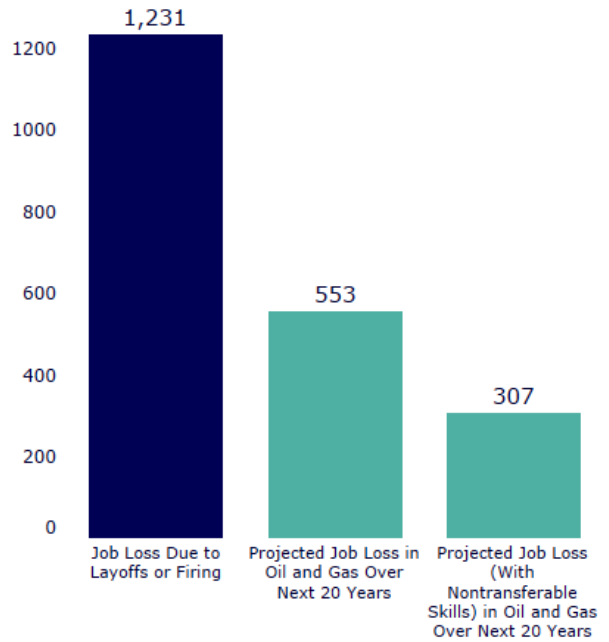
Employment Breakdown



Indiana Annual Job Loss in Manufacturing vs Fossil Fuel Industries



Indiana Projected Annual Job Loss in the Fossil Fuel Industry Compared to Daily Job Loss Due to Layoffs or Firing



Source and Notes: 2019 Quarterly Census on Employment and Wages.



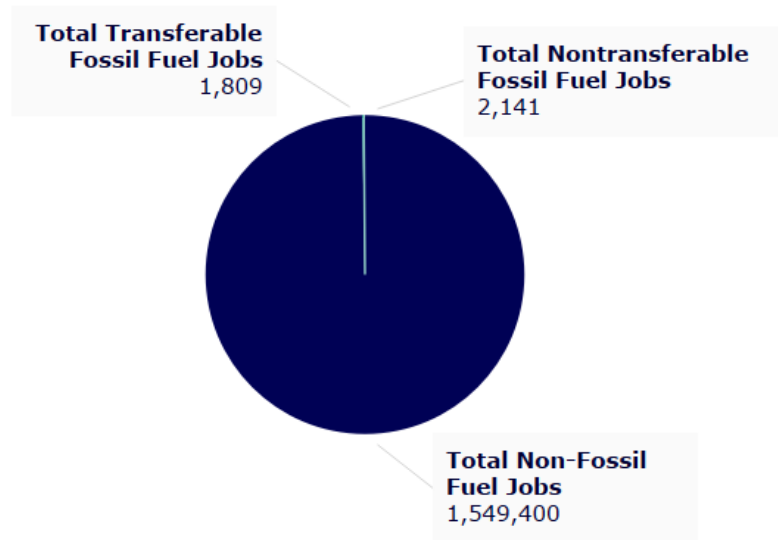
Indiana

Fossil Fuel Industry	Employment	Nontransferable Jobs (percent)	
Drilling Oil and Gas wells	208	33.5	70
Support Activities for Oil and Gas Operations	77	75.5	58
Natural Gas Distribution	1695	44.1	202
Oil and Gas Pipeline Construction	1472	81.1	2522
Petroleum Refineries	0	65.7	0
Mining and Oil and Gas Field Machinery	244	59.2	747
Petroleum Merchant Wholesalers	2628	44.6	144
Pipeline Transportation of Crude Oil	56	63.1	35
Pipeline Transportation of Natural Gas	320	63.1	1194

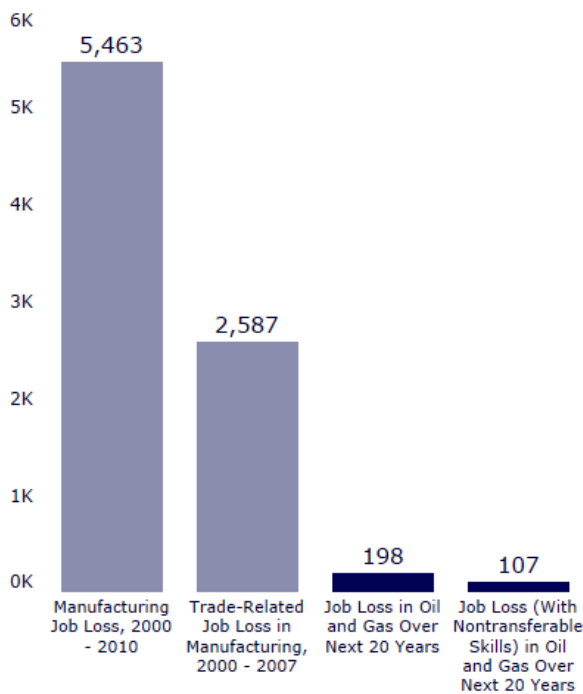
Source and notes: 2019 Quarterly Census on Employment and Wages



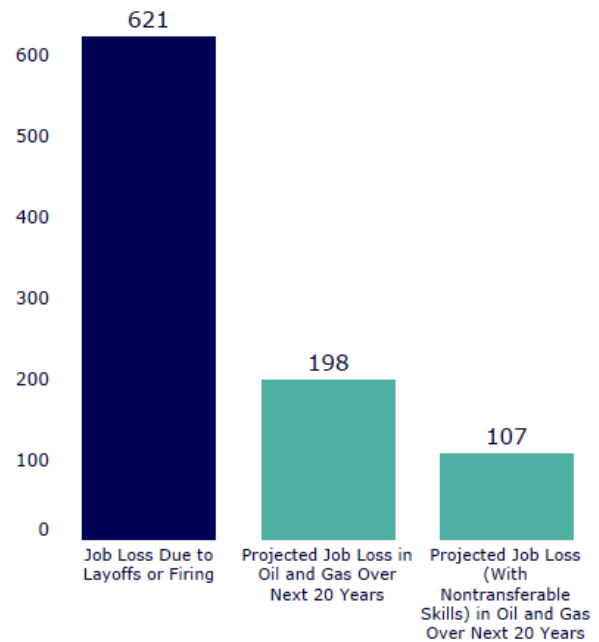
Employment Breakdown



Iowa Annual Job Loss in Manufacturing vs Fossil Fuel Industries



Iowa Projected Annual Job Loss in the Fossil Fuel Industry Compared to Daily Job Loss Due to Layoffs or Firing



Source and Notes: 2019 Quarterly Census on Employment and Wages.



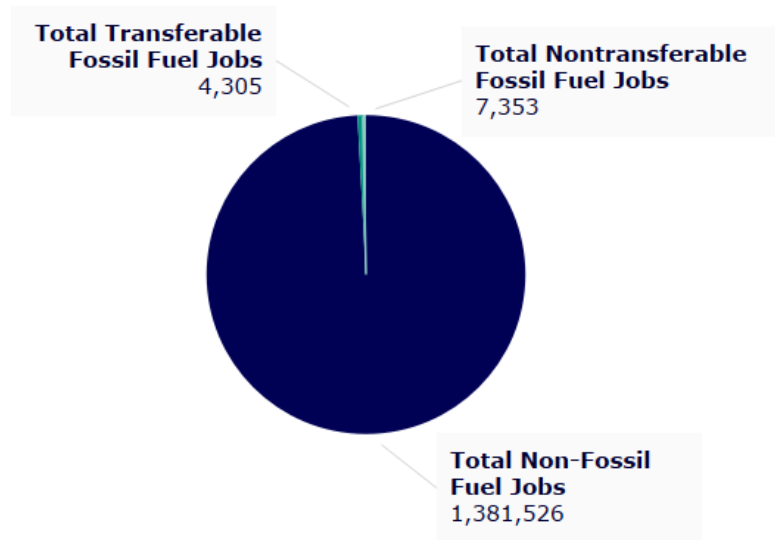
Iowa

Fossil Fuel Industry	Employment	Nontransferable Jobs (percent)	
Drilling Oil and Gas wells	13	33.5	4
Support Activities for Oil and Gas Operations	0	75.5	0
Natural Gas Distribution	572	44.1	191
Oil and Gas Pipeline Construction	351	81.1	837
Petroleum Refineries	0	65.7	0
Mining and Oil and Gas Field Machinery	56	59.2	252
Petroleum Merchant Wholesalers	1207	44.6	33
Pipeline Transportation of Crude Oil	0	63.1	0
Pipeline Transportation of Natural Gas	303	63.1	285

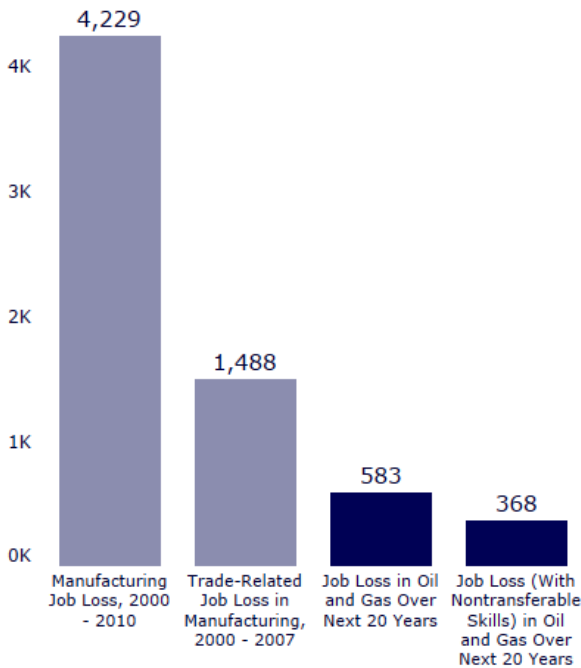
Source and notes: 2019 Quarterly Census on Employment and Wages



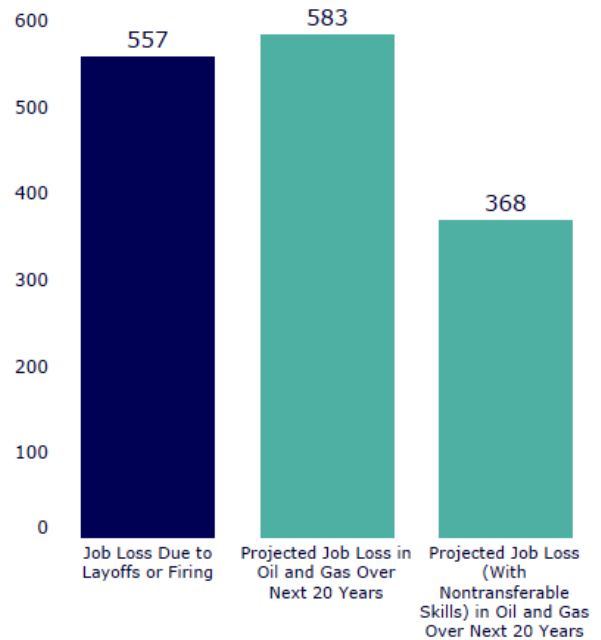
Employment Breakdown



Kansas Annual Job Loss in Manufacturing vs Fossil Fuel Industries



Kansas Projected Annual Job Loss in the Fossil Fuel Industry Compared to Daily Job Loss Due to Layoffs or Firing



Source and Notes: 2019 Quarterly Census on Employment and Wages.

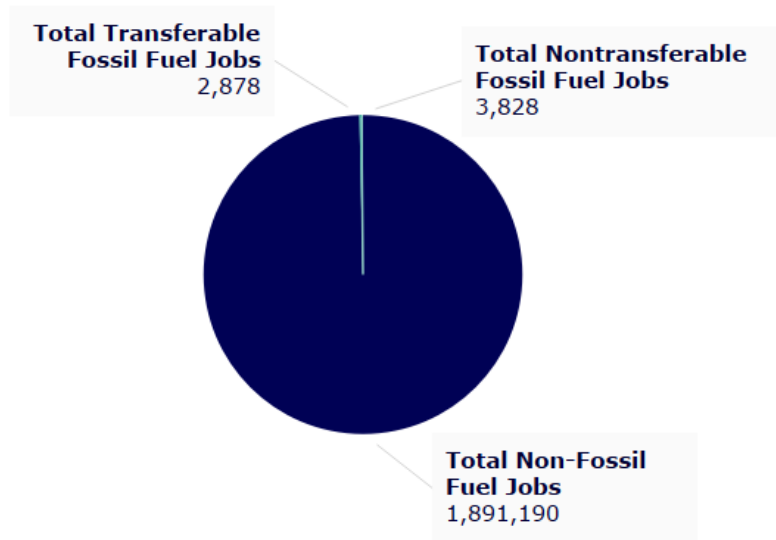


Kansas

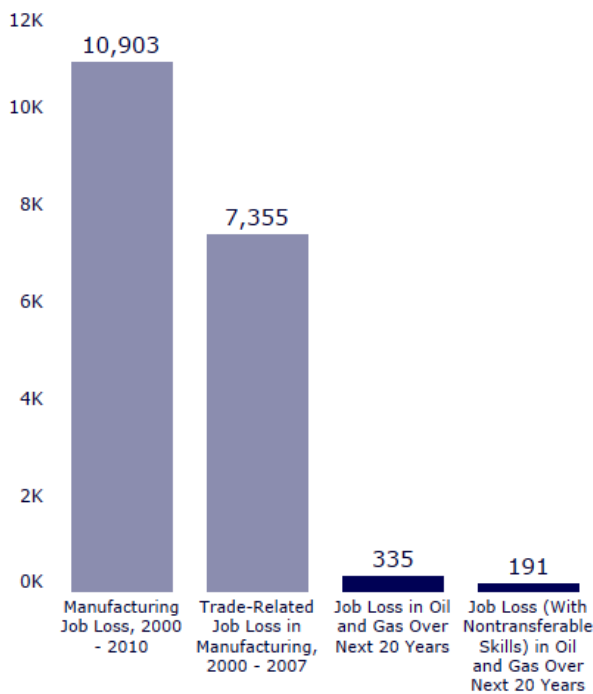
Fossil Fuel Industry	Employment	Nontransferable Jobs (percent)	
Drilling Oil and Gas wells	0	33.5	0
Support Activities for Oil and Gas Operations	2426	75.5	1832
Natural Gas Distribution	1727	44.1	461
Oil and Gas Pipeline Construction	2149	81.1	636
Petroleum Refineries	1483	65.7	974
Mining and Oil and Gas Field Machinery	167	59.2	762
Petroleum Merchant Wholesalers	1821	44.6	99
Pipeline Transportation of Crude Oil	54	63.1	34
Pipeline Transportation of Natural Gas	731	63.1	1743

Source and notes: 2019 Quarterly Census on Employment and Wages

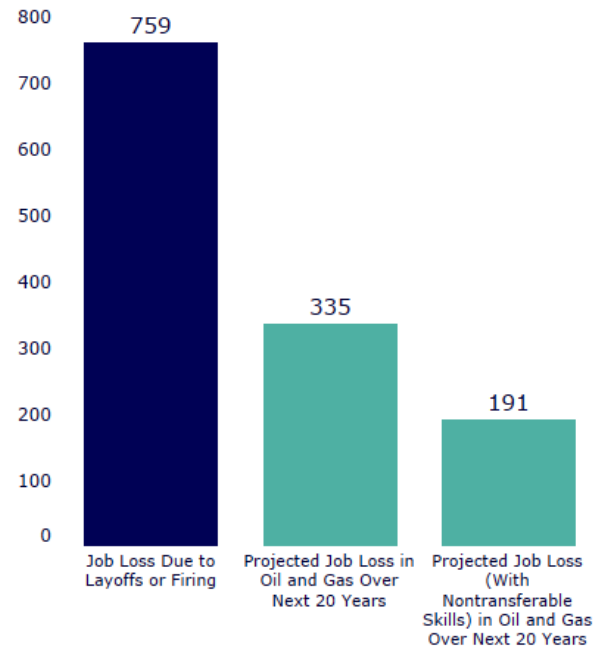




Kentucky Annual Job Loss in Manufacturing vs Fossil Fuel Industries



Kentucky Projected Annual Job Loss in the Fossil Fuel Industry Compared to Daily Job Loss Due to Layoffs or Firing



Source and Notes: 2019 Quarterly Census on Employment and Wages.

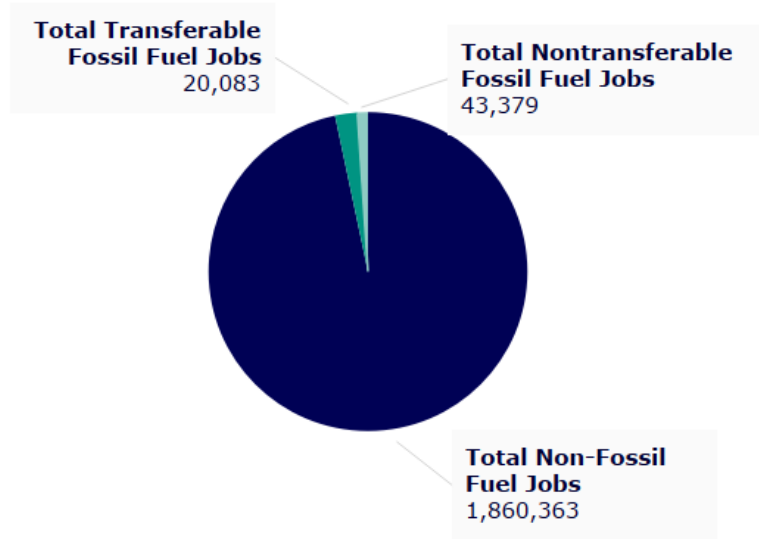
Kentucky

Fossil Fuel Industry	Employment	Nontransferable Jobs (percent)	
Drilling Oil and Gas wells	158	33.5	53
Support Activities for Oil and Gas Operations	195	75.5	147
Natural Gas Distribution	754	44.1	506
Oil and Gas Pipeline Construction	1112	81.1	743
Petroleum Refineries	0	65.7	0
Mining and Oil and Gas Field Machinery	506	59.2	333
Petroleum Merchant Wholesalers	1894	44.6	300
Pipeline Transportation of Crude Oil	0	63.1	0
Pipeline Transportation of Natural Gas	802	63.1	902

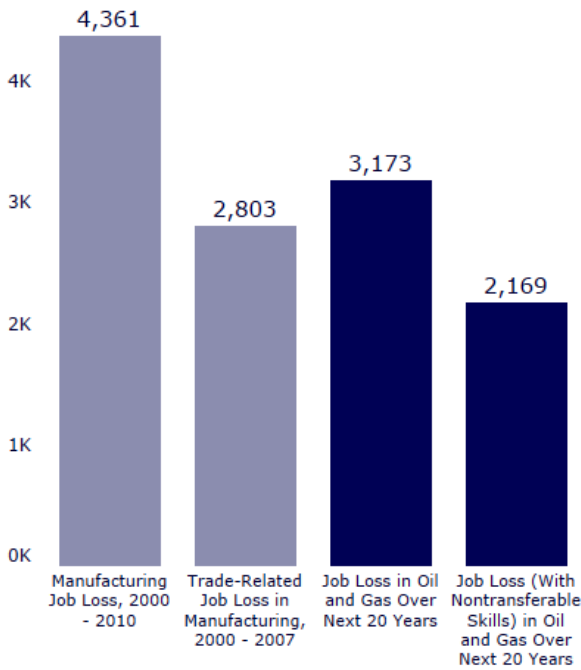
Source and notes: 2019 Quarterly Census on Employment and Wages



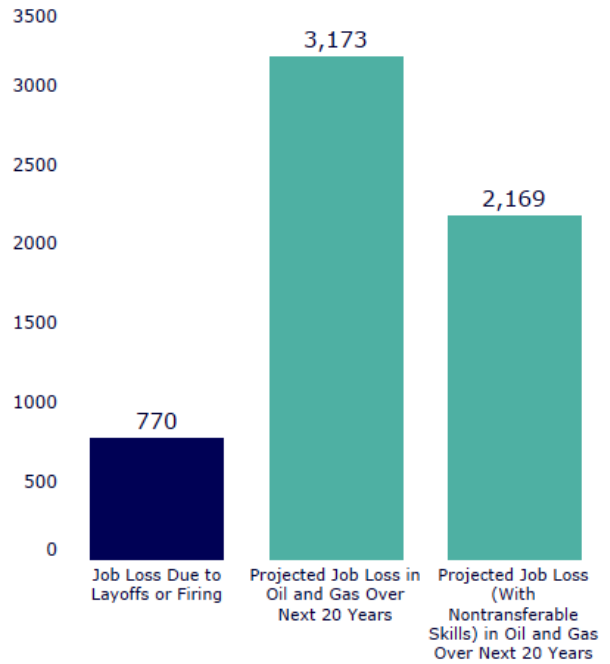
Employment Breakdown



Louisiana Annual Job Loss in Manufacturing vs Fossil Fuel Industries



Louisiana Projected Annual Job Loss in the Fossil Fuel Industry Compared to Daily Job Loss Due to Layoffs or Firing



Source and Notes: 2019 Quarterly Census on Employment and Wages.



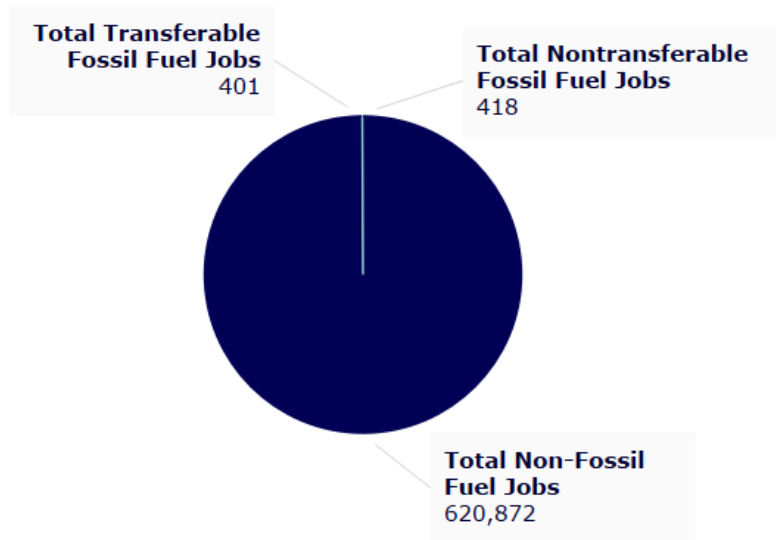
Louisiana

Fossil Fuel Industry	Employment	Nontransferable Jobs (percent)	
Drilling Oil and Gas wells	3791	33.5	1270
Support Activities for Oil and Gas Operations	23399	75.5	17666
Natural Gas Distribution	1042	44.1	1198
Oil and Gas Pipeline Construction	12784	81.1	662
Petroleum Refineries	9463	65.7	6217
Mining and Oil and Gas Field Machinery	7074	59.2	460
Petroleum Merchant Wholesalers	2473	44.6	4188
Pipeline Transportation of Crude Oil	392	63.1	247
Pipeline Transportation of Natural Gas	1899	63.1	10368

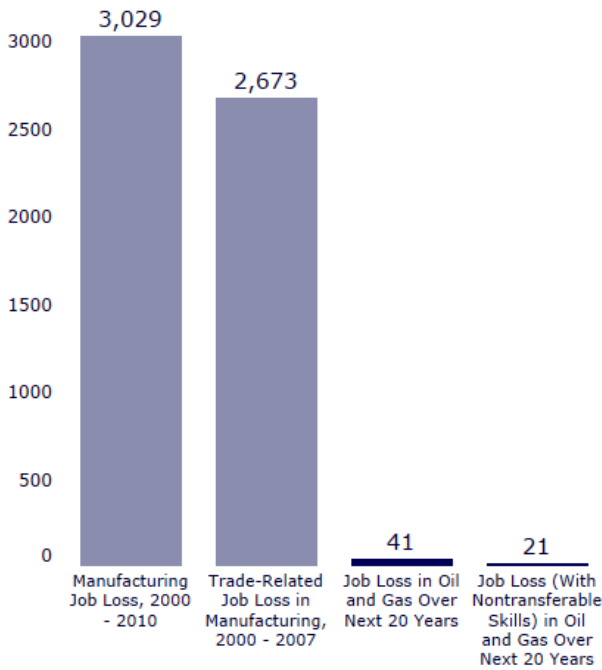
Source and notes: 2019 Quarterly Census on Employment and Wages



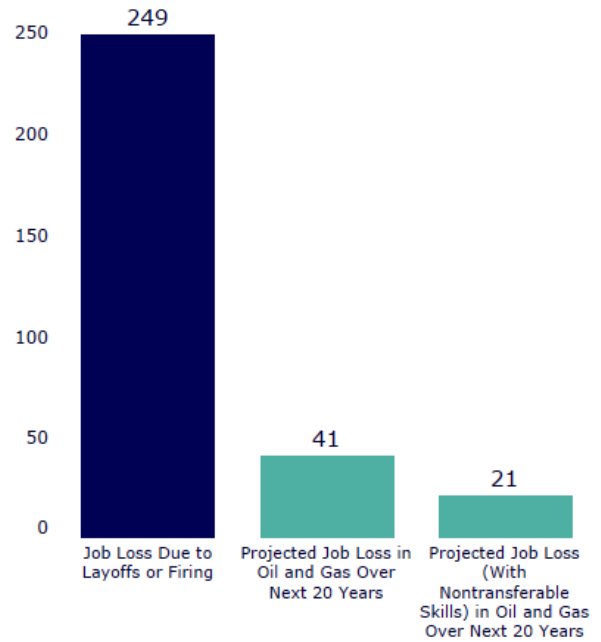
Employment Breakdown



Maine Annual Job Loss in Manufacturing vs Fossil Fuel Industries



Maine Projected Annual Job Loss in the Fossil Fuel Industry Compared to Daily Job Loss Due to Layoffs or Firing



Source and Notes: 2019 Quarterly Census on Employment and Wages.



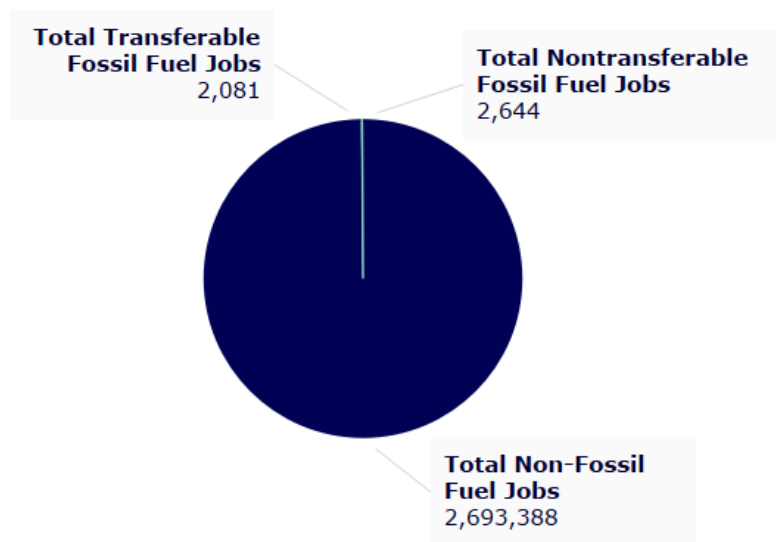
Maine

Fossil Fuel Industry	Employment	Nontransferable Jobs (percent)	
Drilling Oil and Gas wells	0	33.5	0
Support Activities for Oil and Gas Operations	0	75.5	0
Natural Gas Distribution	130	44.1	0
Oil and Gas Pipeline Construction	110	81.1	58
Petroleum Refineries	0	65.7	0
Mining and Oil and Gas Field Machinery	0	59.2	57
Petroleum Merchant Wholesalers	479	44.6	0
Pipeline Transportation of Crude Oil	0	63.1	0
Pipeline Transportation of Natural Gas	0	63.1	89

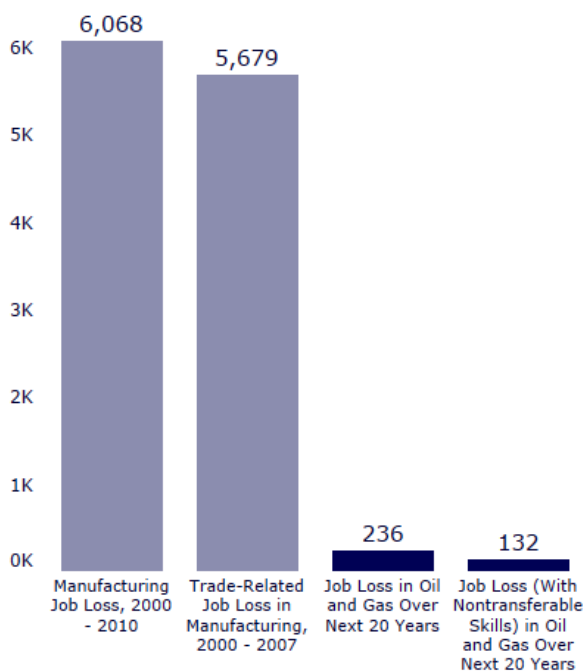
Source and notes: 2019 Quarterly Census on Employment and Wages



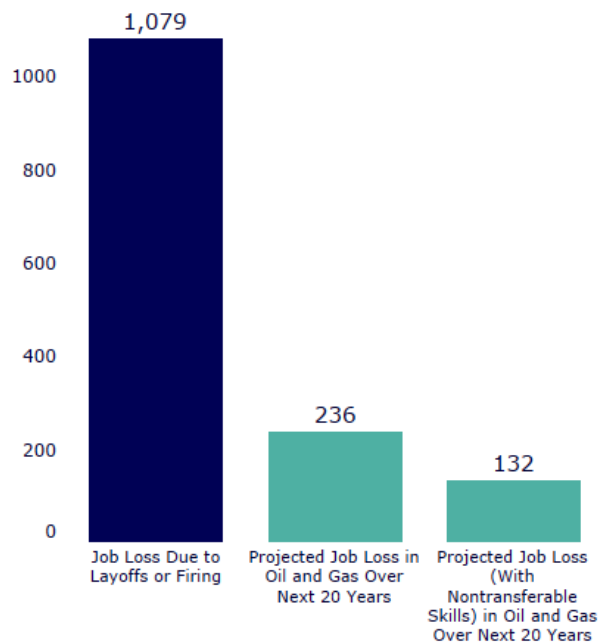
Employment Breakdown



Maryland Annual Job Loss in Manufacturing vs Fossil Fuel Industries



Maryland Projected Annual Job Loss in the Fossil Fuel Industry Compared to Daily Job Loss Due to Layoffs or Firing



Source and Notes: 2019 Quarterly Census on Employment and Wages.



Maryland

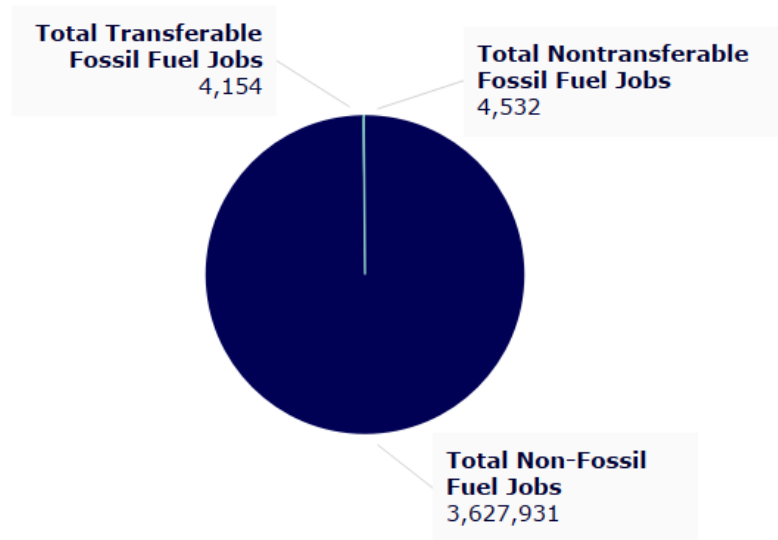
Fossil Fuel Industry	Employment	Nontransferable Jobs (percent)	
Drilling Oil and Gas wells	57	33.5	19
Support Activities for Oil and Gas Operations	0	75.5	0
Natural Gas Distribution	715	44.1	30
Oil and Gas Pipeline Construction	668	81.1	1287
Petroleum Refineries	0	65.7	0
Mining and Oil and Gas Field Machinery	0	59.2	315
Petroleum Merchant Wholesalers	1011	44.6	0
Pipeline Transportation of Crude Oil	0	63.1	0
Pipeline Transportation of Natural Gas	47	63.1	542

Source and notes: 2019 Quarterly Census on Employment and Wages

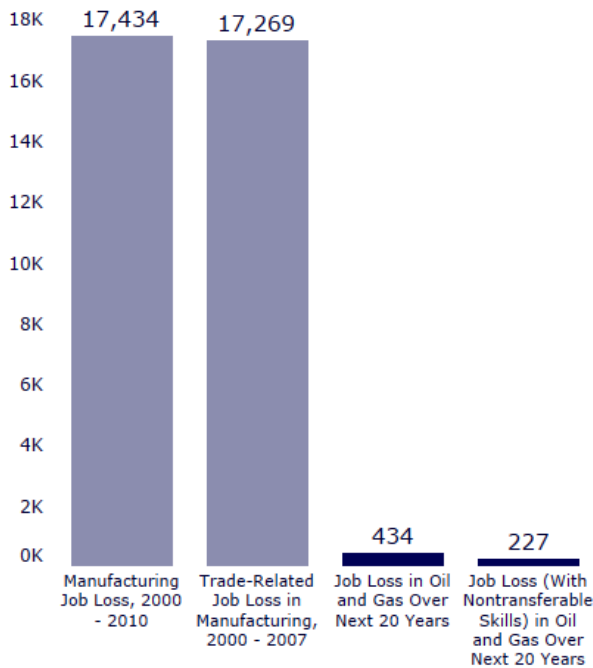


Massachusetts

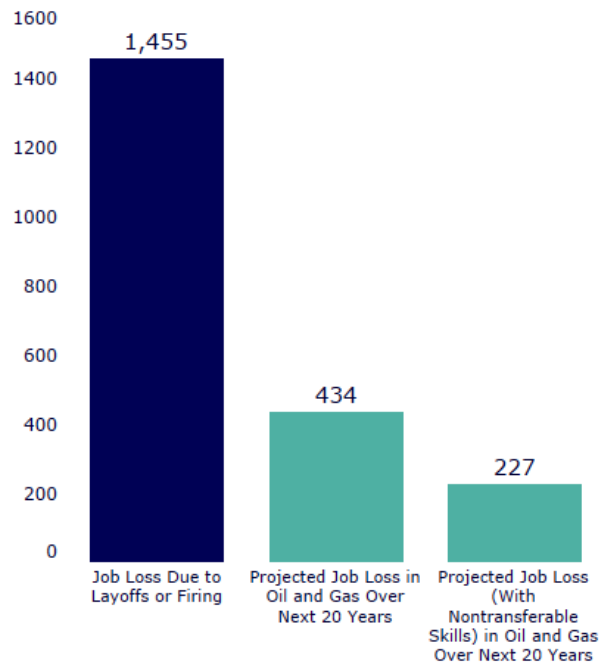
Employment Breakdown



Massachusetts Annual Job Loss in Manufacturing vs Fossil Fuel Industries



Massachusetts Projected Annual Job Loss in the Fossil Fuel Industry Compared to Daily Job Loss Due to Layoffs or Firing



Source and Notes: 2019 Quarterly Census on Employment and Wages.



Massachusetts

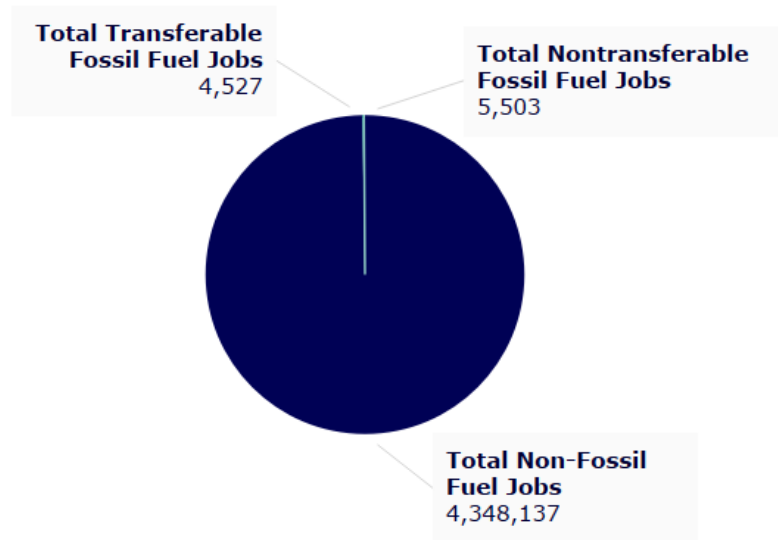
Fossil Fuel Industry	Employment	Nontransferable Jobs (percent)	
Drilling Oil and Gas wells	38	33.5	13
Support Activities for Oil and Gas Operations	13	75.5	10
Natural Gas Distribution	3012	44.1	0
Oil and Gas Pipeline Construction	380	81.1	2343
Petroleum Refineries	0	65.7	0
Mining and Oil and Gas Field Machinery	0	59.2	1328
Petroleum Merchant Wholesalers	1190	44.6	0
Pipeline Transportation of Crude Oil	0	63.1	0
Pipeline Transportation of Natural Gas	0	63.1	308

Source and notes: 2019 Quarterly Census on Employment and Wages

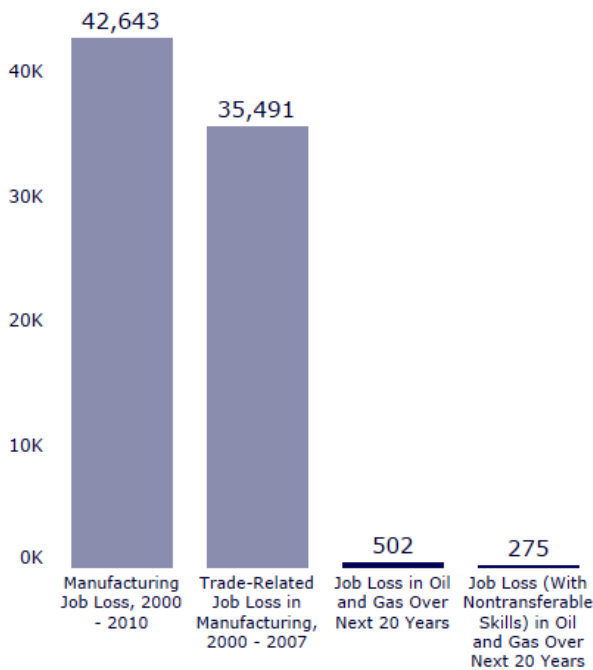


Michigan

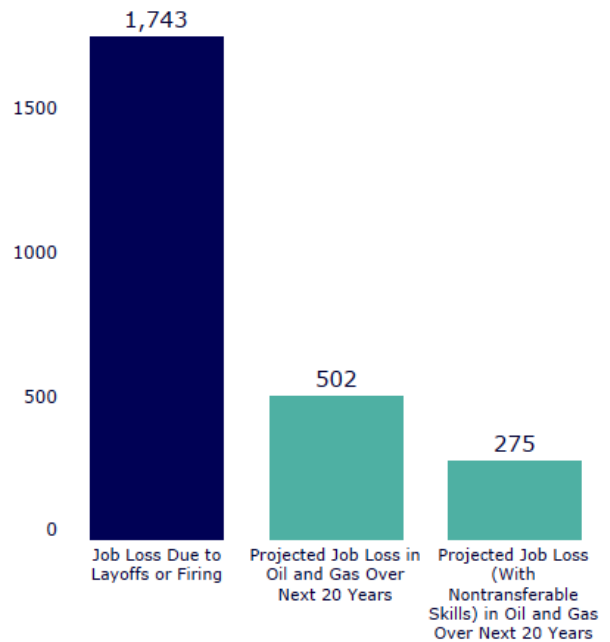
Employment Breakdown



Michigan Annual Job Loss in Manufacturing vs Fossil Fuel Industries



Michigan Projected Annual Job Loss in the Fossil Fuel Industry Compared to Daily Job Loss Due to Layoffs or Firing



Source and Notes: 2019 Quarterly Census on Employment and Wages.



Michigan

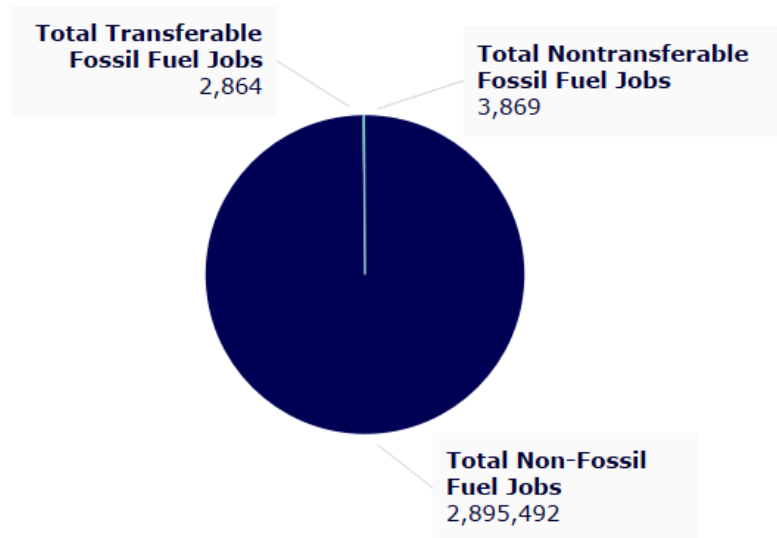
Fossil Fuel Industry	Employment	Nontransferable Jobs (percent)	
Drilling Oil and Gas wells	318	33.5	107
Support Activities for Oil and Gas Operations	1060	75.5	800
Natural Gas Distribution	2579	44.1	623
Oil and Gas Pipeline Construction	1556	81.1	0
Petroleum Refineries	0	65.7	0
Mining and Oil and Gas Field Machinery	0	59.2	1137
Petroleum Merchant Wholesalers	3529	44.6	0
Pipeline Transportation of Crude Oil	0	63.1	0
Pipeline Transportation of Natural Gas	988	63.1	1262

Source and notes: 2019 Quarterly Census on Employment and Wages

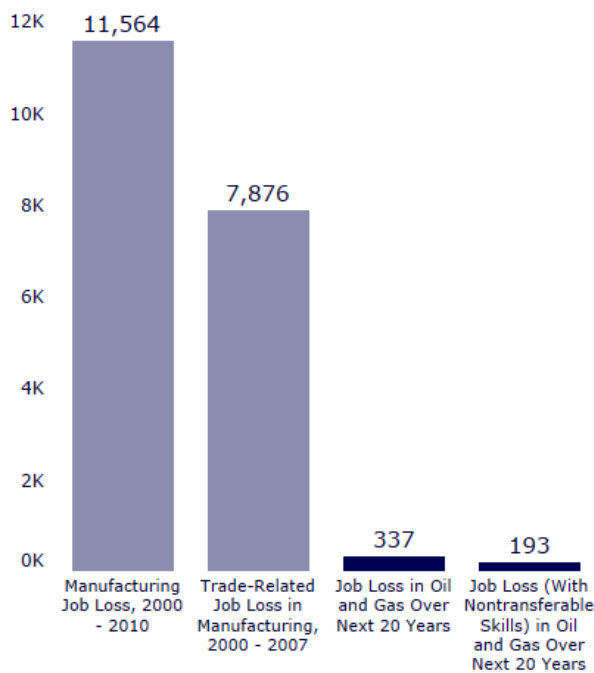


Minnesota

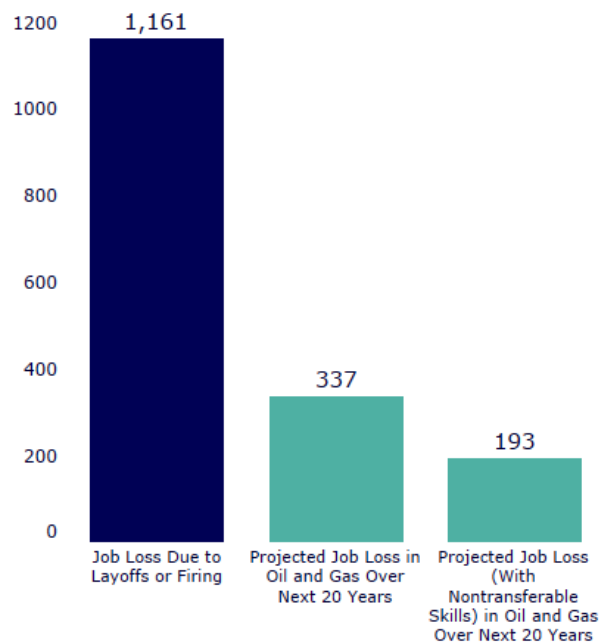
Employment Breakdown



Minnesota Annual Job Loss in Manufacturing vs Fossil Fuel Industries



Minnesota Projected Annual Job Loss in the Fossil Fuel Industry Compared to Daily Job Loss Due to Layoffs or Firing



Source and Notes: 2019 Quarterly Census on Employment and Wages.

Minnesota

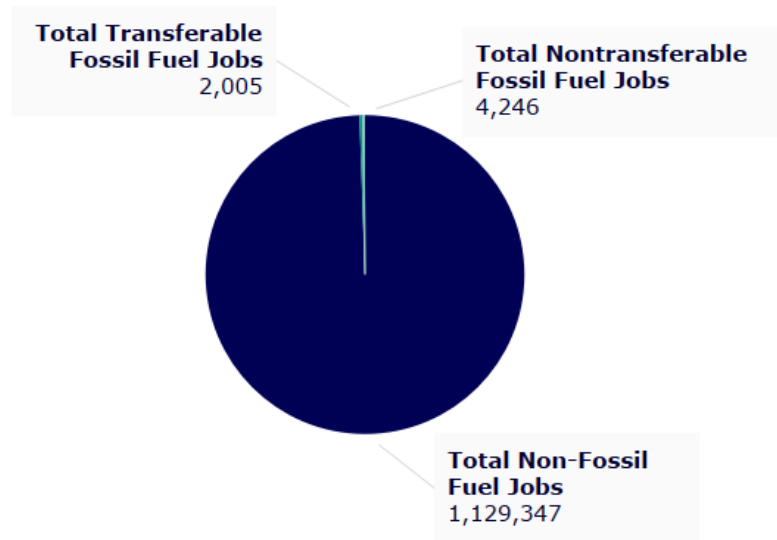
Fossil Fuel Industry	Employment	Nontransferable Jobs (percent)	
Drilling Oil and Gas wells	22	33.5	7
Support Activities for Oil and Gas Operations	0	75.5	0
Natural Gas Distribution	1390	44.1	141
Oil and Gas Pipeline Construction	1654	81.1	1009
Petroleum Refineries	0	65.7	0
Mining and Oil and Gas Field Machinery	0	59.2	613
Petroleum Merchant Wholesalers	1699	44.6	0
Pipeline Transportation of Crude Oil	0	63.1	0
Pipeline Transportation of Natural Gas	223	63.1	1341

Source and notes: 2019 Quarterly Census on Employment and Wages

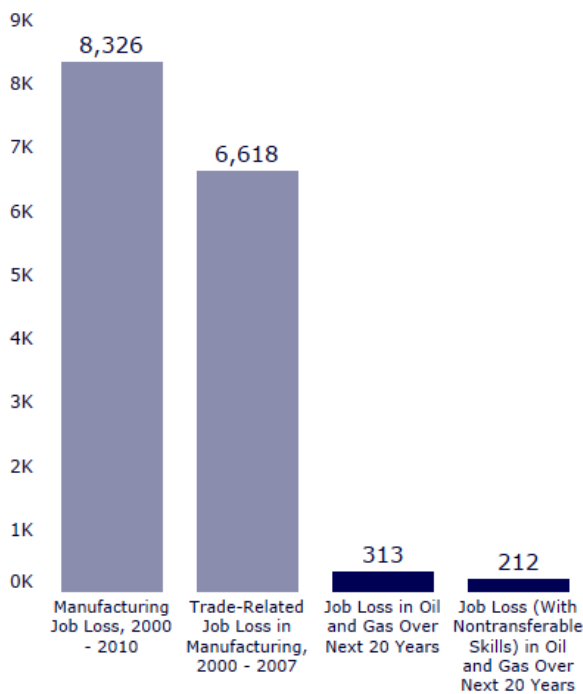


Mississippi

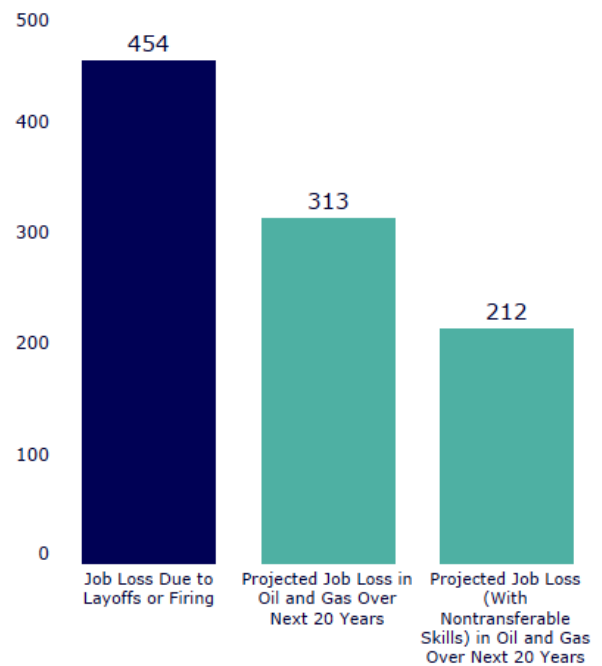
Employment Breakdown



Mississippi Annual Job Loss in Manufacturing vs Fossil Fuel Industries



Mississippi Projected Annual Job Loss in the Fossil Fuel Industry Compared to Daily Job Loss Due to Layoffs or Firing



Source and Notes: 2019 Quarterly Census on Employment and Wages.



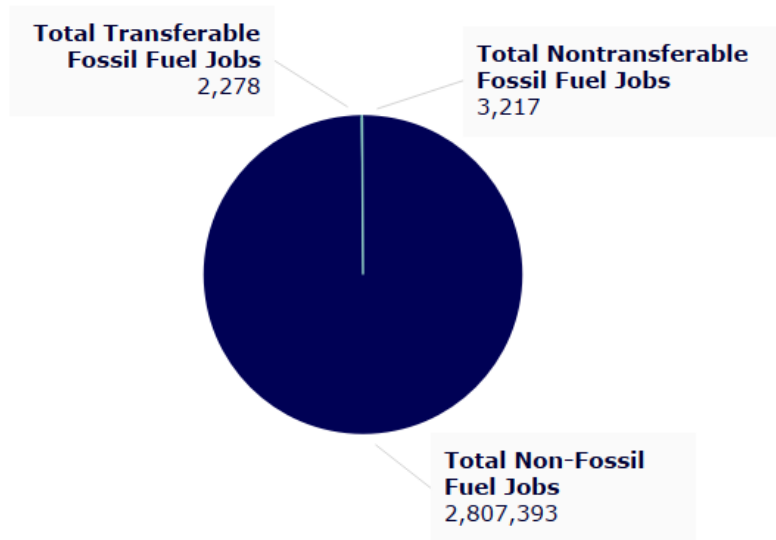
Mississippi

Fossil Fuel Industry	Employment	Nontransferable Jobs (percent)	
Drilling Oil and Gas wells	0	33.5	0
Support Activities for Oil and Gas Operations	1813	75.5	1369
Natural Gas Distribution	551	44.1	339
Oil and Gas Pipeline Construction	2032	81.1	0
Petroleum Refineries	0	65.7	0
Mining and Oil and Gas Field Machinery	155	59.2	243
Petroleum Merchant Wholesalers	962	44.6	92
Pipeline Transportation of Crude Oil	200	63.1	126
Pipeline Transportation of Natural Gas	538	63.1	1648

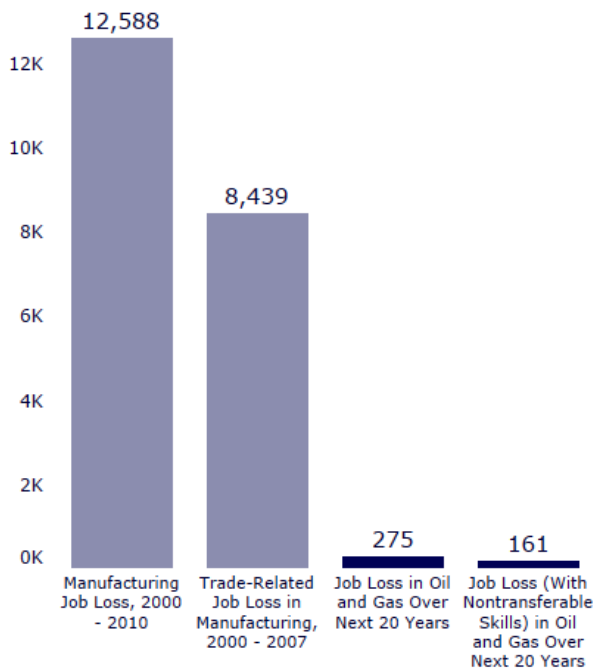
Source and notes: 2019 Quarterly Census on Employment and Wages



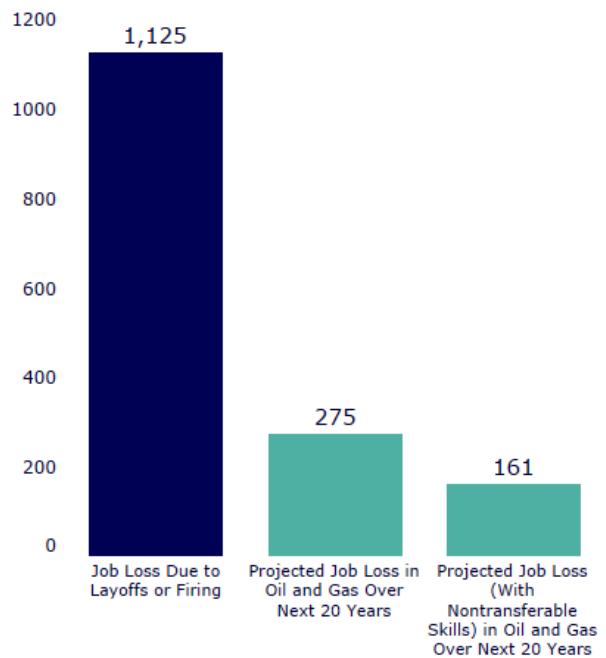
Employment Breakdown



Missouri Annual Job Loss in Manufacturing vs Fossil Fuel Industries



Missouri Projected Annual Job Loss in the Fossil Fuel Industry Compared to Daily Job Loss Due to Layoffs or Firing



Source and Notes: 2019 Quarterly Census on Employment and Wages.



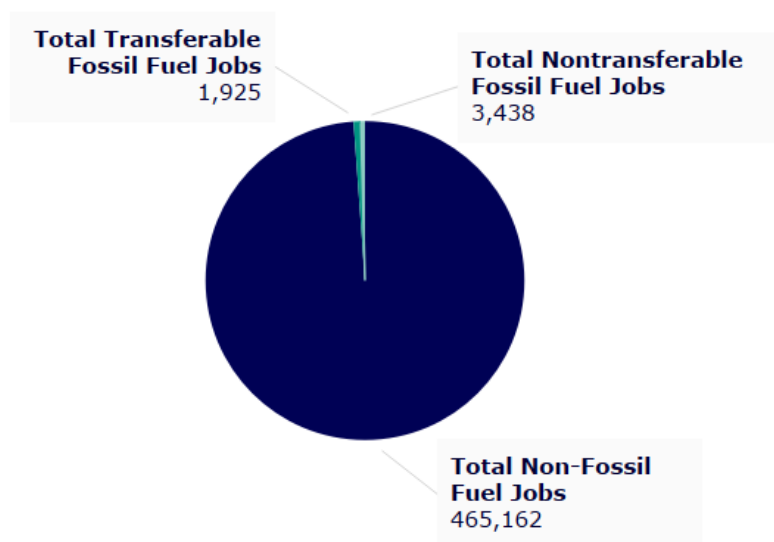
Missouri

Fossil Fuel Industry	Employment	Nontransferable Jobs (percent)	
Drilling Oil and Gas wells	75	33.5	25
Support Activities for Oil and Gas Operations	66	75.5	50
Natural Gas Distribution	0	44.1	0
Oil and Gas Pipeline Construction	1222	81.1	1090
Petroleum Refineries	67	65.7	44
Mining and Oil and Gas Field Machinery	308	59.2	0
Petroleum Merchant Wholesalers	1871	44.6	182
Pipeline Transportation of Crude Oil	0	63.1	0
Pipeline Transportation of Natural Gas	0	63.1	991

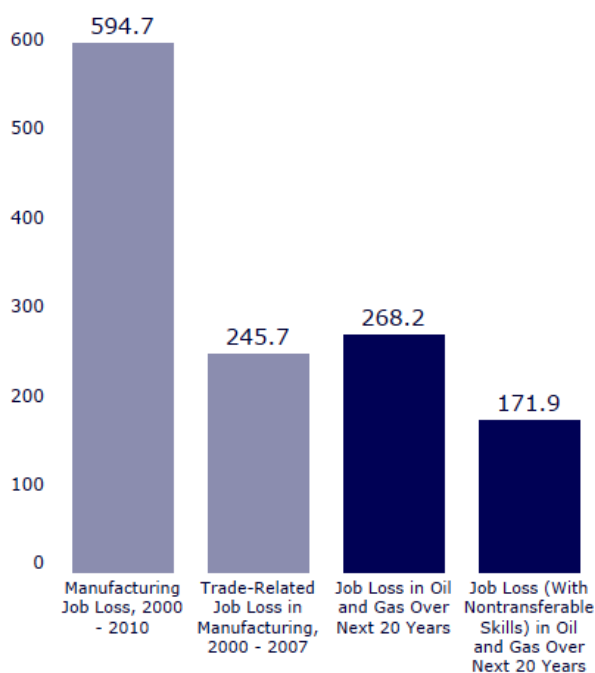
Source and notes: 2019 Quarterly Census on Employment and Wages



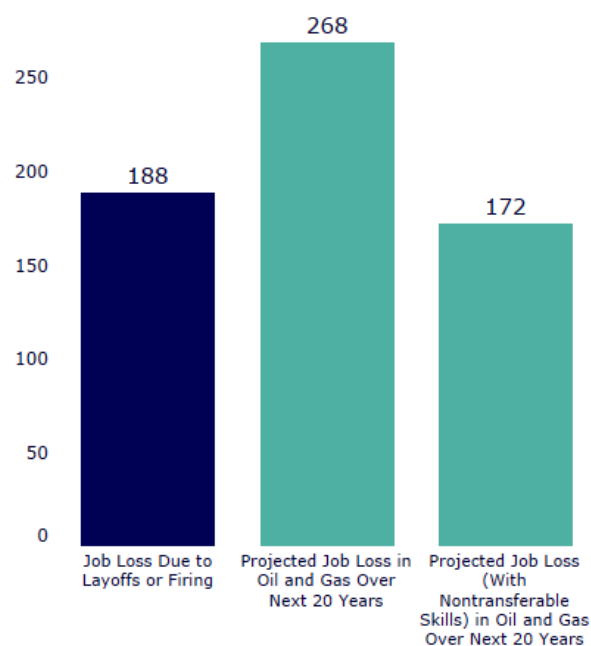
Employment Breakdown



Montana Annual Job Loss in Manufacturing vs Fossil Fuel Industries



Montana Projected Annual Job Loss in the Fossil Fuel Industry Compared to Daily Job Loss Due to Layoffs or Firing



Source and Notes: 2019 Quarterly Census on Employment and Wages.



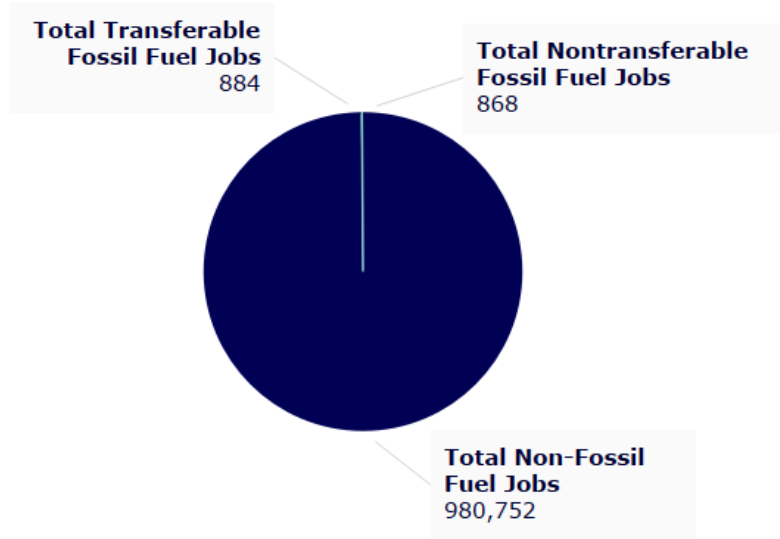
Montana

Fossil Fuel Industry	Employment	Nontransferable Jobs (percent)	
Drilling Oil and Gas wells	159	33.5	53
Support Activities for Oil and Gas Operations	1124	75.5	849
Natural Gas Distribution	364	44.1	163
Oil and Gas Pipeline Construction	931	81.1	263
Petroleum Refineries	1281	65.7	842
Mining and Oil and Gas Field Machinery	5	59.2	161
Petroleum Merchant Wholesalers	786	44.6	3
Pipeline Transportation of Crude Oil	0	63.1	0
Pipeline Transportation of Natural Gas	258	63.1	755

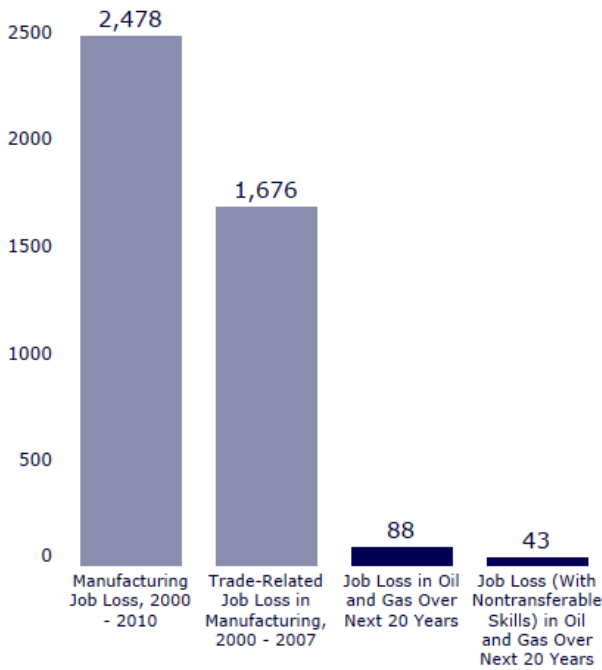
Source and notes: 2019 Quarterly Census on Employment and Wages



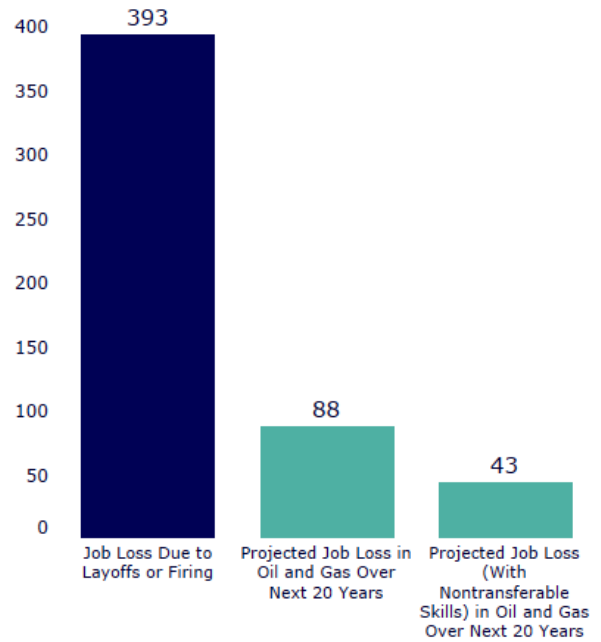
Employment Breakdown



Nebraska Annual Job Loss in Manufacturing vs Fossil Fuel Industries



Nebraska Projected Annual Job Loss in the Fossil Fuel Industry Compared to Daily Job Loss Due to Layoffs or Firing



Source and Notes: 2019 Quarterly Census on Employment and Wages.



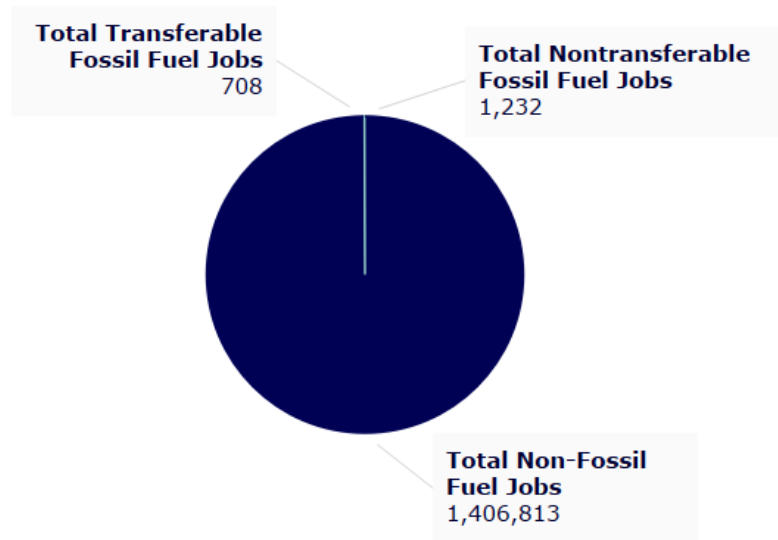
Nebraska

Fossil Fuel Industry	Employment	Nontransferable Jobs (percent)	
Drilling Oil and Gas wells	75	33.5	25
Support Activities for Oil and Gas Operations	91	75.5	69
Natural Gas Distribution	682	44.1	0
Oil and Gas Pipeline Construction	192	81.1	0
Petroleum Refineries	0	65.7	0
Mining and Oil and Gas Field Machinery	0	59.2	301
Petroleum Merchant Wholesalers	712	44.6	0
Pipeline Transportation of Crude Oil	0	63.1	0
Pipeline Transportation of Natural Gas	0	63.1	156

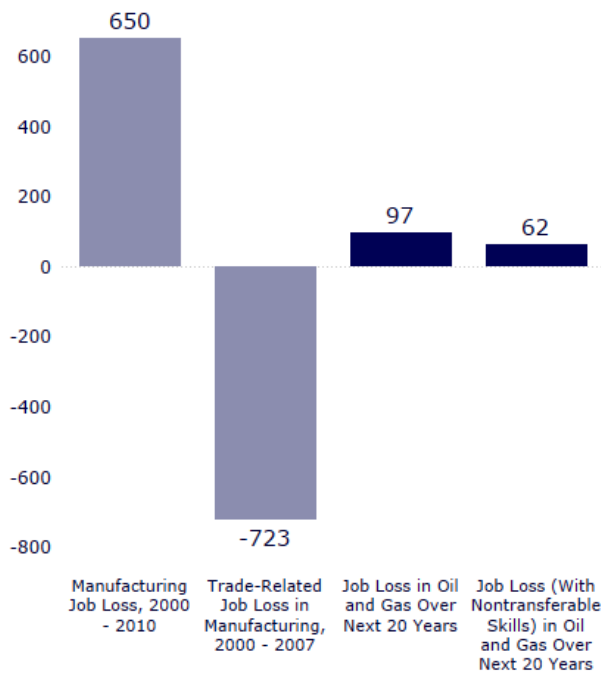
Source and notes: 2019 Quarterly Census on Employment and Wages



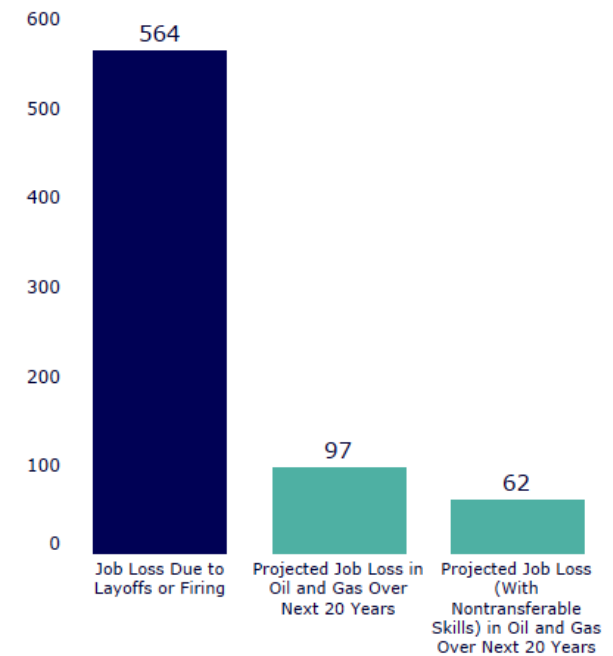
Employment Breakdown



Nevada Annual Job Loss in Manufacturing vs Fossil Fuel Industries



Nevada Projected Annual Job Loss in the Fossil Fuel Industry Compared to Daily Job Loss Due to Layoffs or Firing



Source and Notes: 2019 Quarterly Census on Employment and Wages.



Nevada

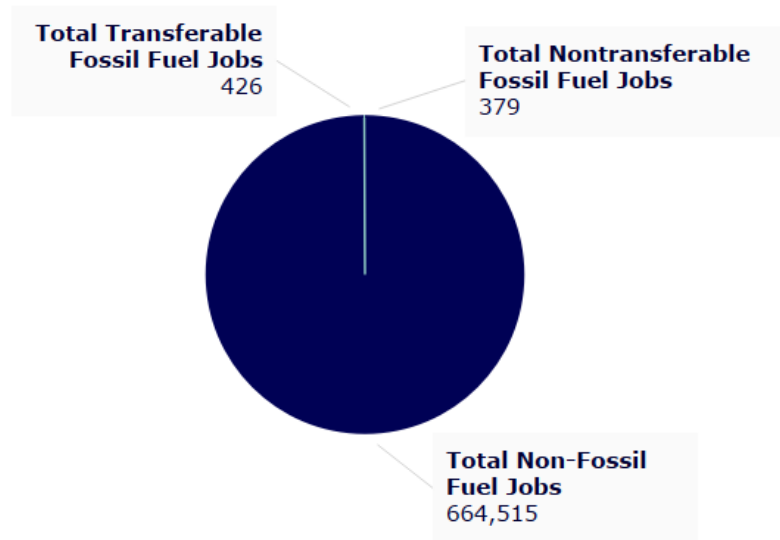
Fossil Fuel Industry	Employment	Nontransferable Jobs (percent)	
Drilling Oil and Gas wells	0	33.5	0
Support Activities for Oil and Gas Operations	32	75.5	24
Natural Gas Distribution	0	44.1	21
Oil and Gas Pipeline Construction	767	81.1	307
Petroleum Refineries	0	65.7	0
Mining and Oil and Gas Field Machinery	0	59.2	0
Petroleum Merchant Wholesalers	575	44.6	0
Pipeline Transportation of Crude Oil	0	63.1	0
Pipeline Transportation of Natural Gas	34	63.1	622

Source and notes: 2019 Quarterly Census on Employment and Wages

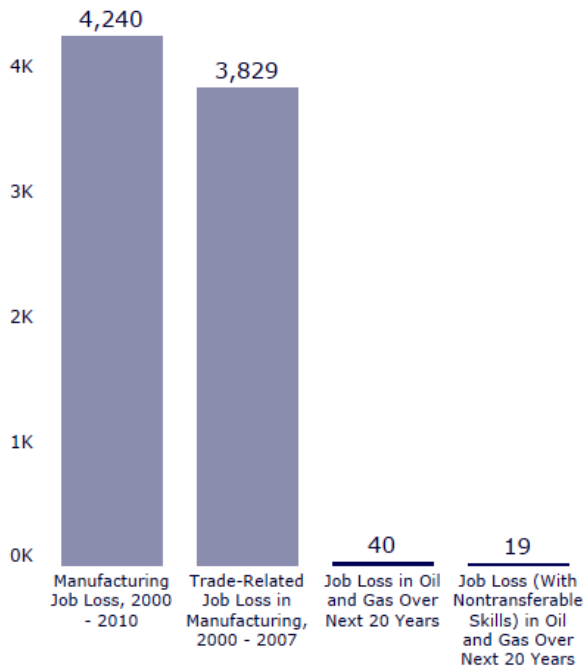


New Hampshire

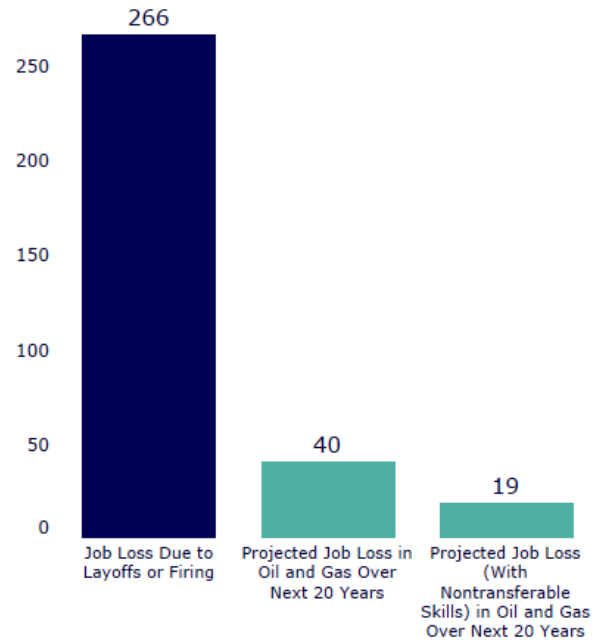
Employment Breakdown



New Hampshire Annual Job Loss in Manufacturing vs Fossil Fuel Industries



New Hampshire Projected Annual Job Loss in the Fossil Fuel Industry Compared to Daily Job Loss Due to Layoffs or Firing



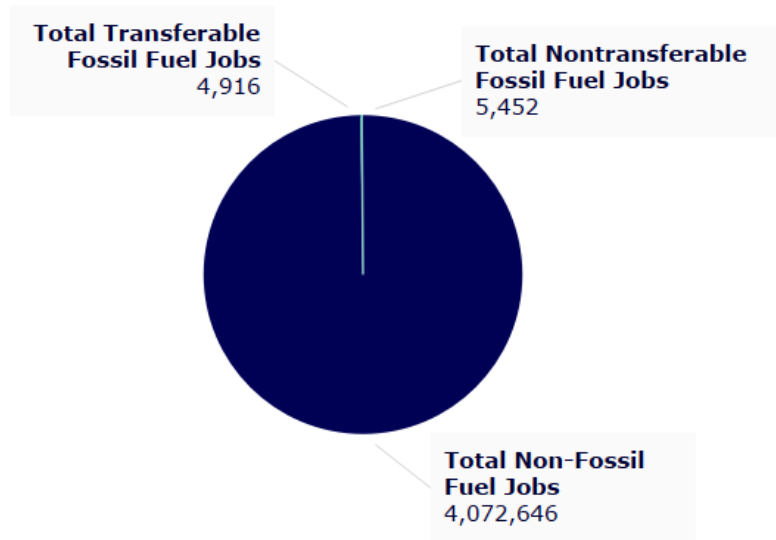
Source and Notes: 2019 Quarterly Census on Employment and Wages.

New Hampshire

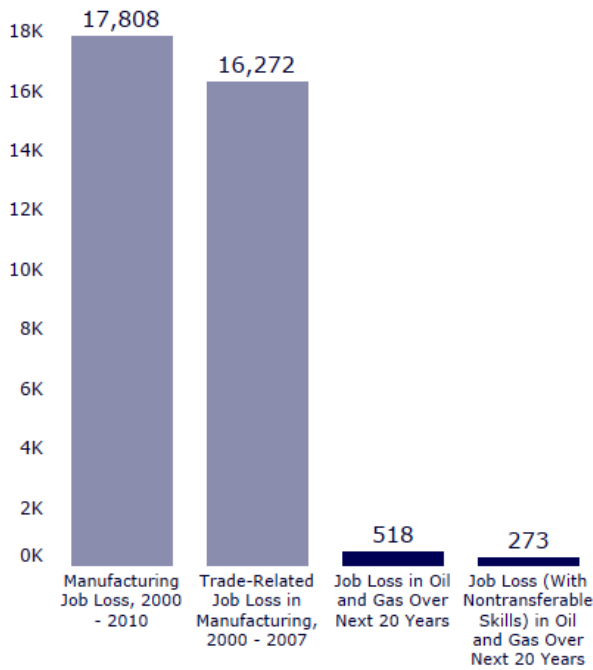
Fossil Fuel Industry	Employment	Nontransferable Jobs (percent)	
Drilling Oil and Gas wells	22	33.5	7
Support Activities for Oil and Gas Operations	0	75.5	0
Natural Gas Distribution	275	44.1	0
Oil and Gas Pipeline Construction	66	81.1	0
Petroleum Refineries	0	65.7	0
Mining and Oil and Gas Field Machinery	0	59.2	121
Petroleum Merchant Wholesalers	442	44.6	0
Pipeline Transportation of Crude Oil	0	63.1	0
Pipeline Transportation of Natural Gas	0	63.1	54

Source and notes: 2019 Quarterly Census on Employment and Wages

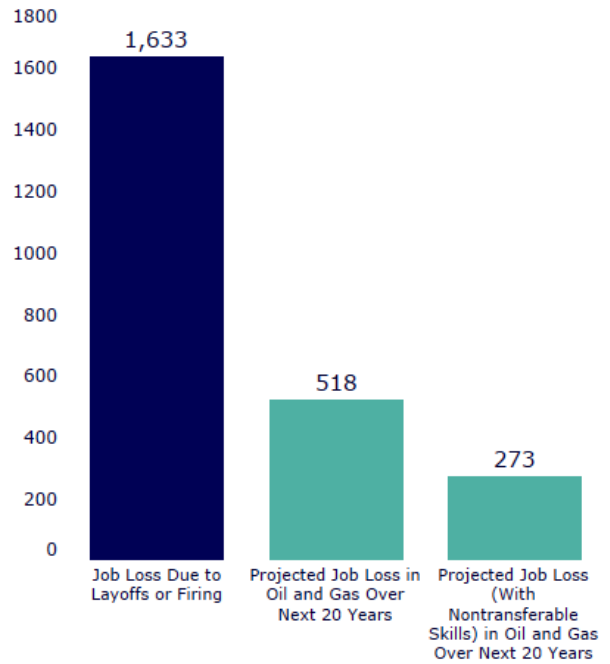




New Jersey Annual Job Loss in Manufacturing vs Fossil Fuel Industries



New Jersey Projected Annual Job Loss in the Fossil Fuel Industry Compared to Daily Job Loss Due to Layoffs or Firing



Source and Notes: 2019 Quarterly Census on Employment and Wages.

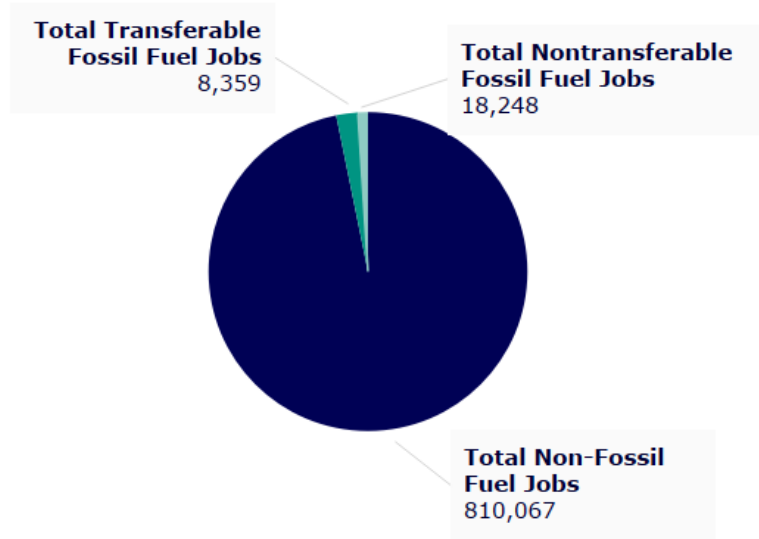
New Jersey

Fossil Fuel Industry	Employment	Nontransferable Jobs (percent)	
Drilling Oil and Gas wells	0	33.5	0
Support Activities for Oil and Gas Operations	124	75.5	94
Natural Gas Distribution	5190	44.1	0
Oil and Gas Pipeline Construction	1883	81.1	561
Petroleum Refineries	0	65.7	0
Mining and Oil and Gas Field Machinery	0	59.2	2289
Petroleum Merchant Wholesalers	2201	44.6	0
Pipeline Transportation of Crude Oil	0	63.1	0
Pipeline Transportation of Natural Gas	0	63.1	1527

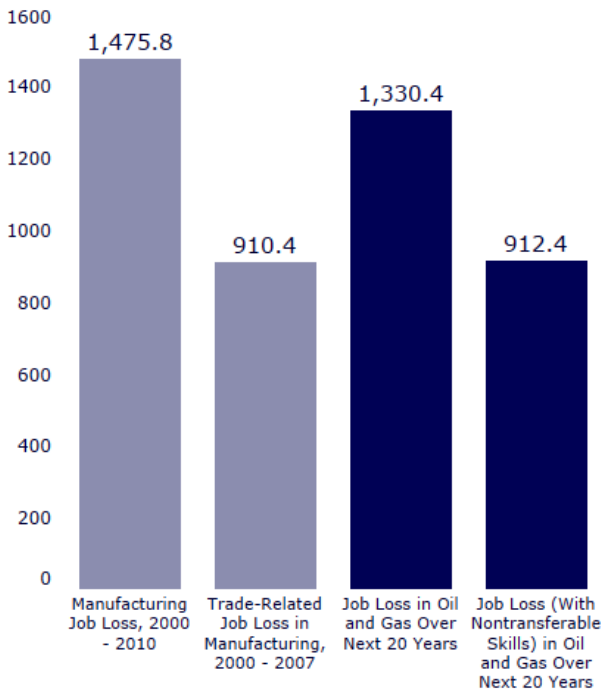
Source and notes: 2019 Quarterly Census on Employment and Wages



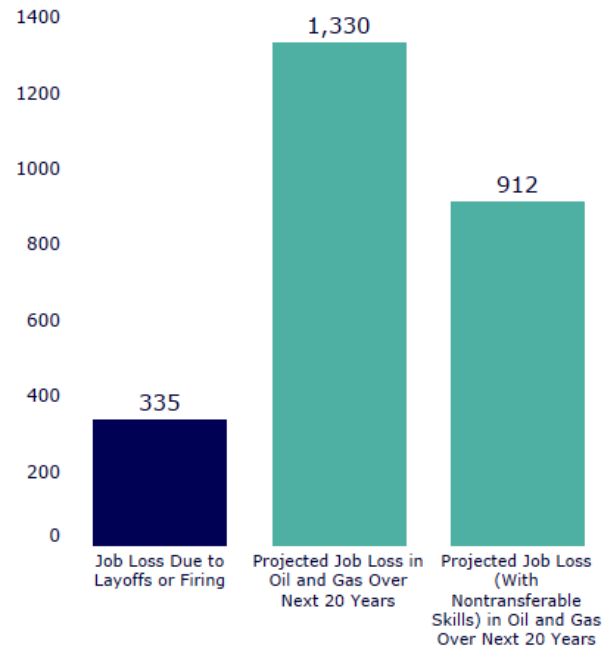
Employment Breakdown



New Mexico Annual Job Loss in Manufacturing vs Fossil Fuel Industries



New Mexico Projected Annual Job Loss in the Fossil Fuel Industry Compared to Daily Job Loss Due to Layoffs or Firing



Source and Notes: 2019 Quarterly Census on Employment and Wages.



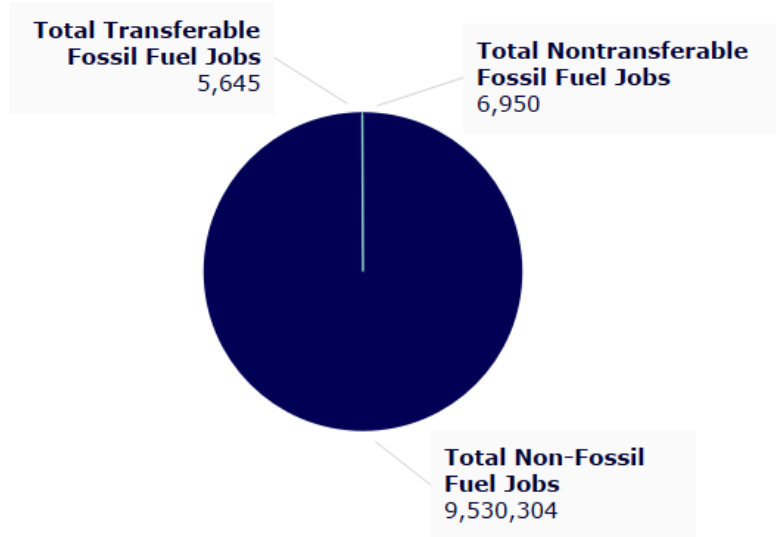
New Mexico

Fossil Fuel Industry	Employment	Nontransferable Jobs (percent)	
Drilling Oil and Gas wells	2908	33.5	974
Support Activities for Oil and Gas Operations	14542	75.5	10979
Natural Gas Distribution	858	44.1	294
Oil and Gas Pipeline Construction	4797	81.1	347
Petroleum Refineries	980	65.7	644
Mining and Oil and Gas Field Machinery	630	59.2	378
Petroleum Merchant Wholesalers	825	44.6	373
Pipeline Transportation of Crude Oil	0	63.1	0
Pipeline Transportation of Natural Gas	466	63.1	3890

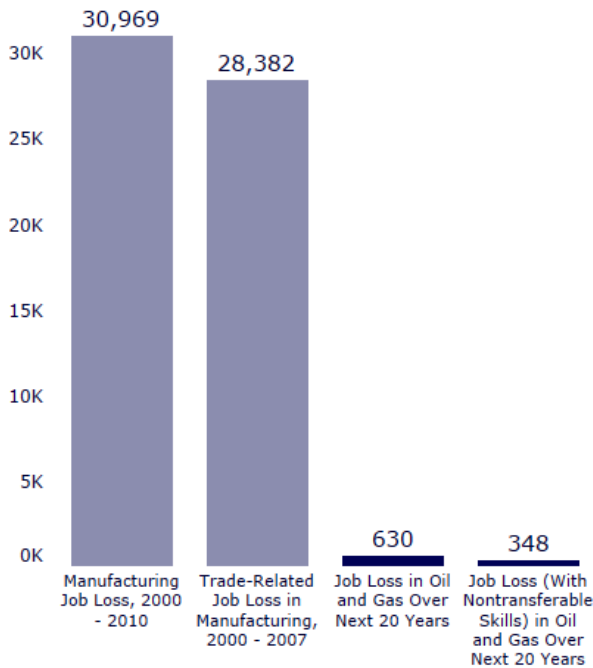
Source and notes: 2019 Quarterly Census on Employment and Wages



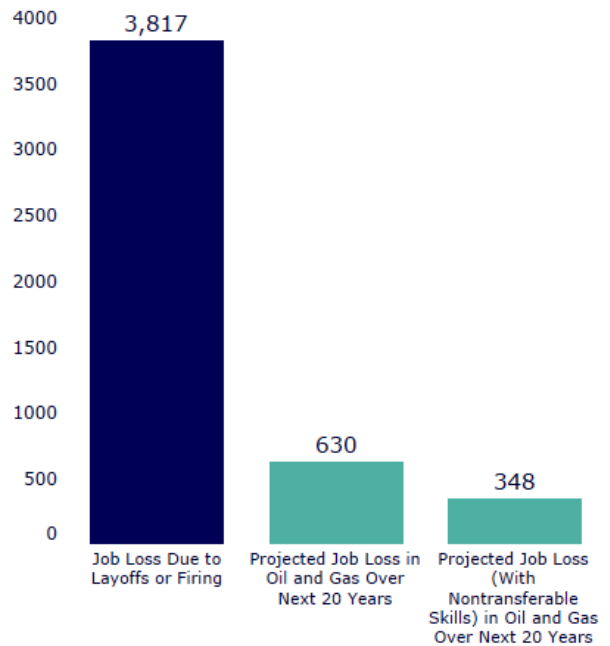
Employment Breakdown



New York Annual Job Loss in Manufacturing vs Fossil Fuel Industries



New York Projected Annual Job Loss in the Fossil Fuel Industry Compared to Daily Job Loss Due to Layoffs or Firing



Source and Notes: 2019 Quarterly Census on Employment and Wages.



New York

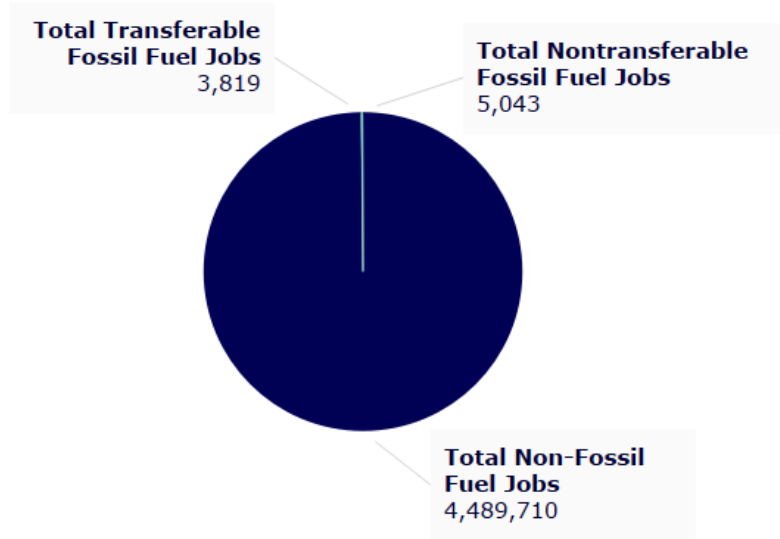
Fossil Fuel Industry	Employment	Nontransferable Jobs (percent)	
Drilling Oil and Gas wells	129	33.5	43
Support Activities for Oil and Gas Operations	266	75.5	201
Natural Gas Distribution	4475	44.1	176
Oil and Gas Pipeline Construction	2712	81.1	1051
Petroleum Refineries	28	65.7	18
Mining and Oil and Gas Field Machinery	0	59.2	1973
Petroleum Merchant Wholesalers	2887	44.6	0
Pipeline Transportation of Crude Oil	0	63.1	0
Pipeline Transportation of Natural Gas	279	63.1	2199

Source and notes: 2019 Quarterly Census on Employment and Wages

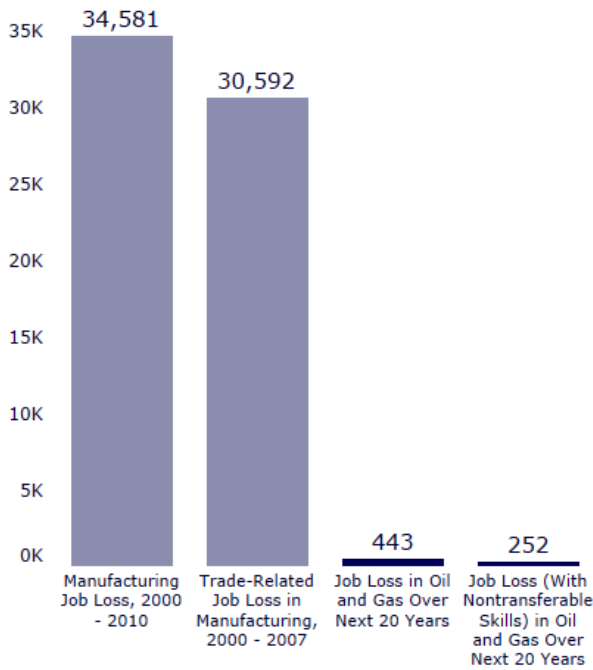


North Carolina

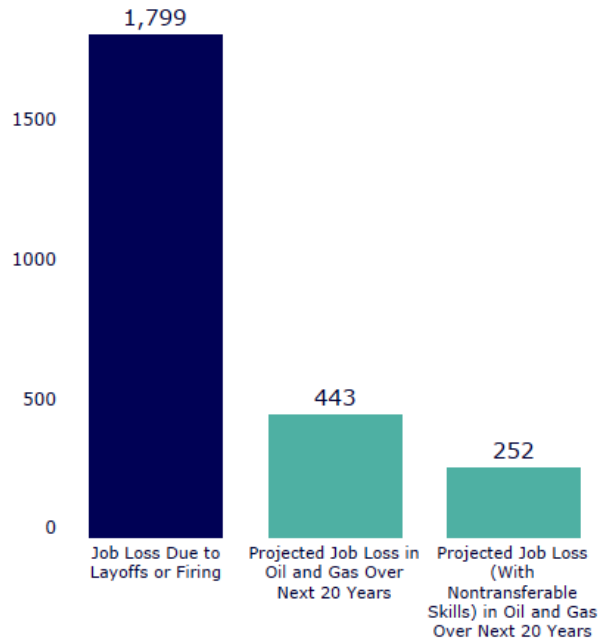
Employment Breakdown



North Carolina Annual Job Loss in Manufacturing vs Fossil Fuel Industries



North Carolina Projected Annual Job Loss in the Fossil Fuel Industry Compared to Daily Job Loss Due to Layoffs or Firing



Source and Notes: 2019 Quarterly Census on Employment and Wages.



North Carolina

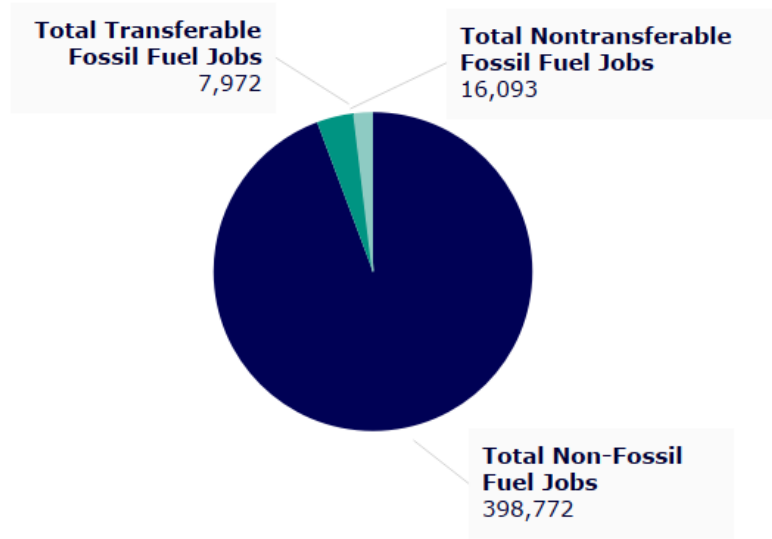
Fossil Fuel Industry	Employment	Nontransferable Jobs (percent)	
Drilling Oil and Gas wells	153	33.5	51
Support Activities for Oil and Gas Operations	59	75.5	45
Natural Gas Distribution	2056	44.1	0
Oil and Gas Pipeline Construction	2421	81.1	940
Petroleum Refineries	5	65.7	3
Mining and Oil and Gas Field Machinery	0	59.2	907
Petroleum Merchant Wholesalers	2541	44.6	0
Pipeline Transportation of Crude Oil	0	63.1	0
Pipeline Transportation of Natural Gas	0	63.1	1963

Source and notes: 2019 Quarterly Census on Employment and Wages

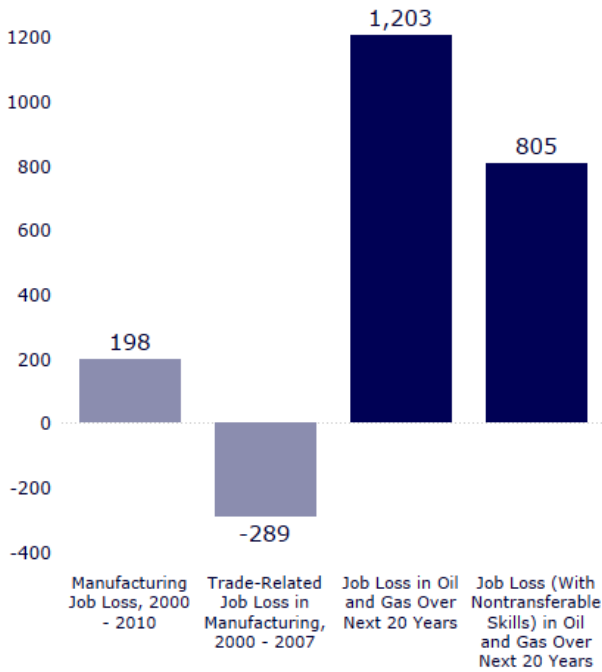


North Dakota

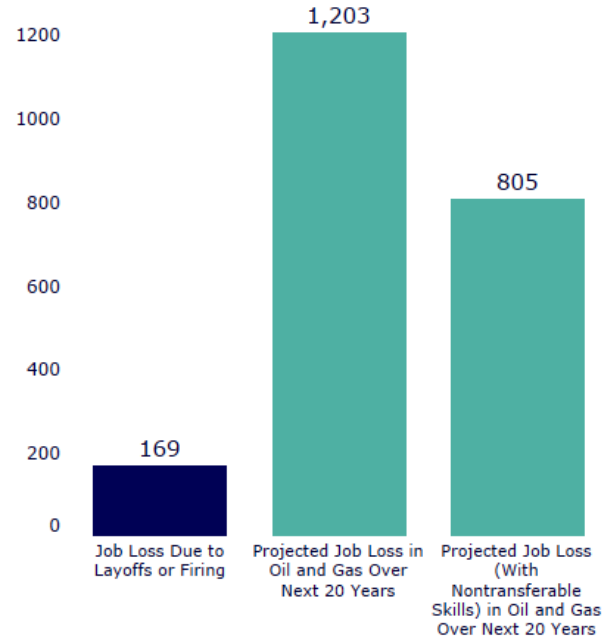
Employment Breakdown



North Dakota Annual Job Loss in Manufacturing vs Fossil Fuel Industries



North Dakota Projected Annual Job Loss in the Fossil Fuel Industry Compared to Daily Job Loss Due to Layoffs or Firing



Source and Notes: 2019 Quarterly Census on Employment and Wages.



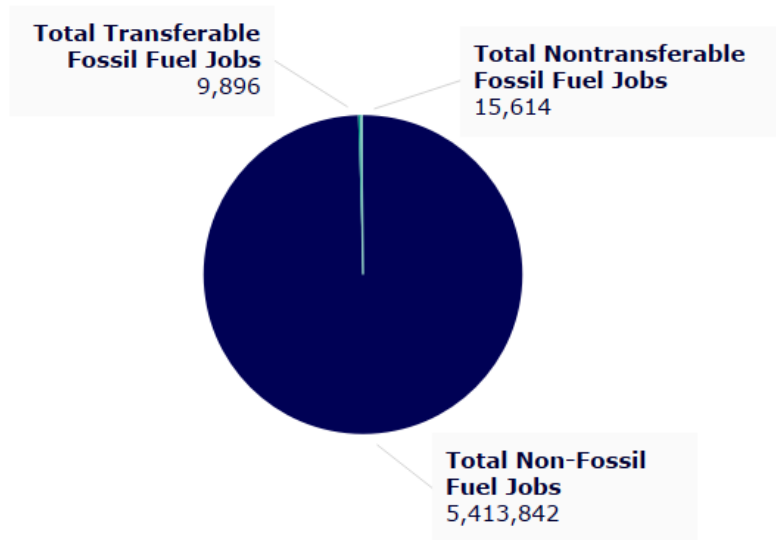
North Dakota

Fossil Fuel Industry	Employment	Nontransferable Jobs (percent)	
Drilling Oil and Gas wells	2928	33.5	981
Support Activities for Oil and Gas Operations	13641	75.5	10299
Natural Gas Distribution	631	44.1	608
Oil and Gas Pipeline Construction	3192	81.1	569
Petroleum Refineries	0	65.7	0
Mining and Oil and Gas Field Machinery	0	59.2	278
Petroleum Merchant Wholesalers	1726	44.6	0
Pipeline Transportation of Crude Oil	0	63.1	0
Pipeline Transportation of Natural Gas	963	63.1	2589

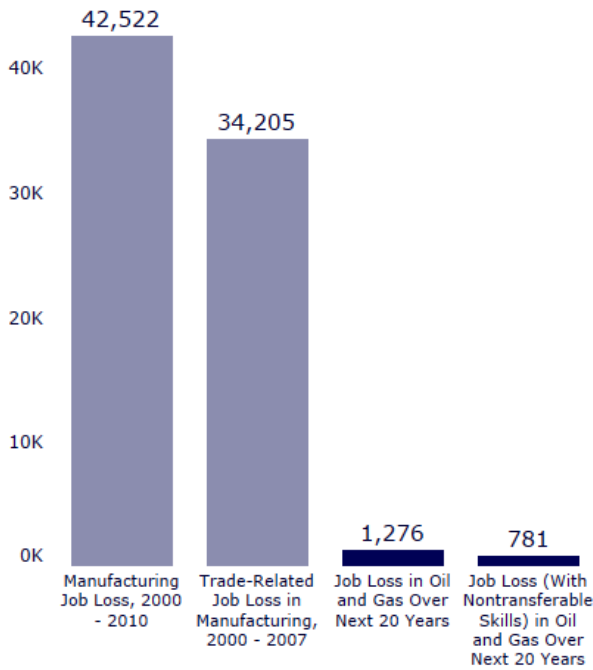
Source and notes: 2019 Quarterly Census on Employment and Wages



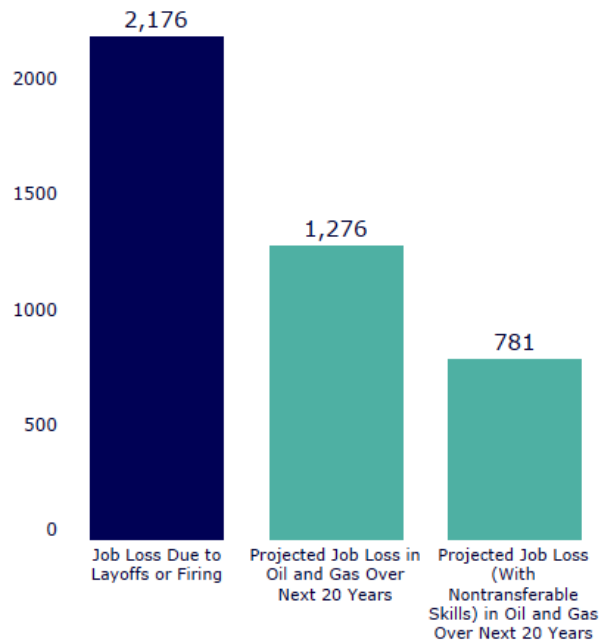
Employment Breakdown



Ohio Annual Job Loss in Manufacturing vs Fossil Fuel Industries



Ohio Projected Annual Job Loss in the Fossil Fuel Industry Compared to Daily Job Loss Due to Layoffs or Firing



Source and Notes: 2019 Quarterly Census on Employment and Wages.

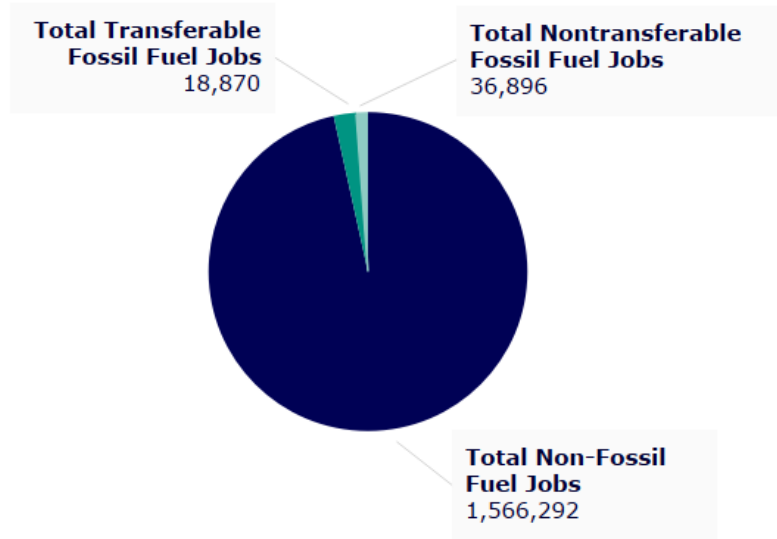


Ohio

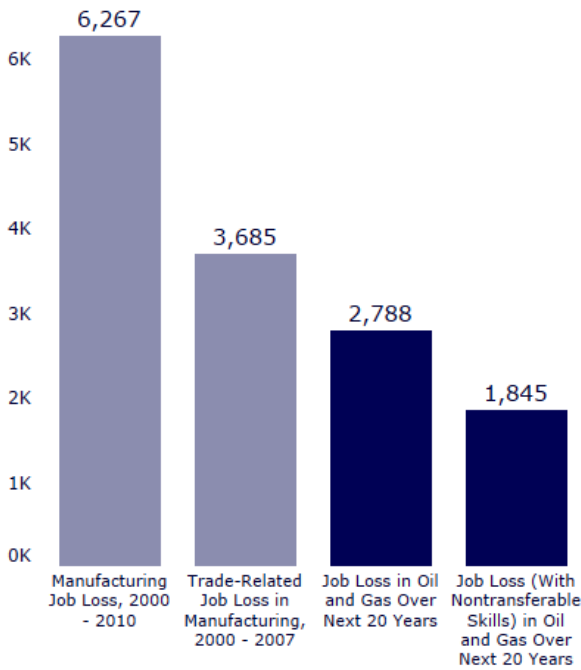
Fossil Fuel Industry	Employment	Nontransferable Jobs (percent)	
Drilling Oil and Gas wells	798	33.5	267
Support Activities for Oil and Gas Operations	4609	75.5	3480
Natural Gas Distribution	5450	44.1	364
Oil and Gas Pipeline Construction	5317	81.1	1529
Petroleum Refineries	2098	65.7	1378
Mining and Oil and Gas Field Machinery	609	59.2	2403
Petroleum Merchant Wholesalers	3406	44.6	361
Pipeline Transportation of Crude Oil	0	63.1	0
Pipeline Transportation of Natural Gas	577	63.1	4312

Source and notes: 2019 Quarterly Census on Employment and Wages

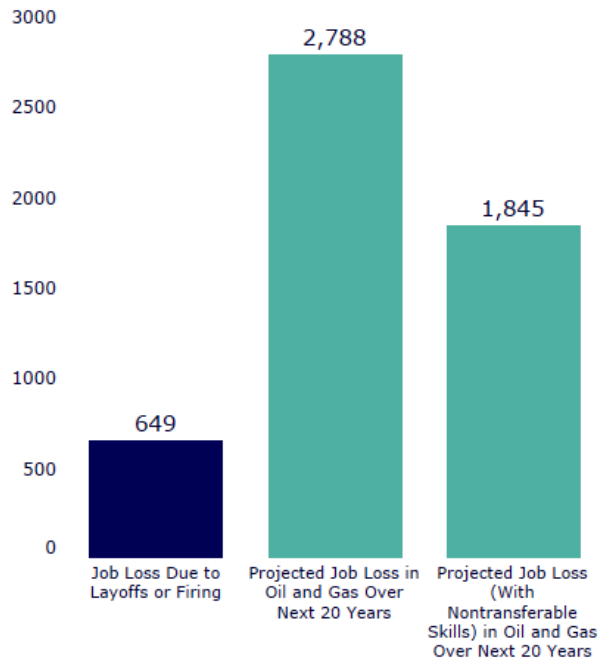




Oklahoma Annual Job Loss in Manufacturing vs Fossil Fuel Industries



Oklahoma Projected Annual Job Loss in the Fossil Fuel Industry Compared to Daily Job Loss Due to Layoffs or Firing



Source and Notes: 2019 Quarterly Census on Employment and Wages.

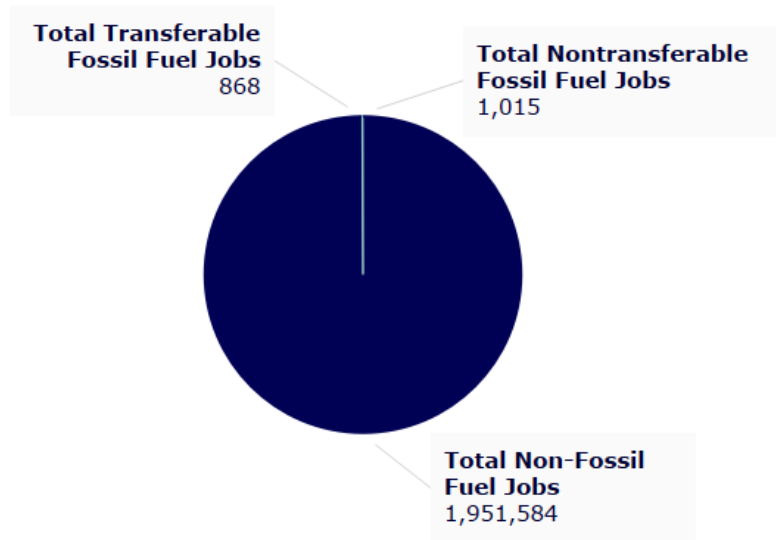
Oklahoma

Fossil Fuel Industry	Employment	Nontransferable Jobs (percent)	
Drilling Oil and Gas wells	4426	33.5	1483
Support Activities for Oil and Gas Operations	24919	75.5	18814
Natural Gas Distribution	3832	44.1	890
Oil and Gas Pipeline Construction	7907	81.1	1250
Petroleum Refineries	1616	65.7	1062
Mining and Oil and Gas Field Machinery	7047	59.2	1690
Petroleum Merchant Wholesalers	2271	44.6	4172
Pipeline Transportation of Crude Oil	175	63.1	110
Pipeline Transportation of Natural Gas	1410	63.1	6413

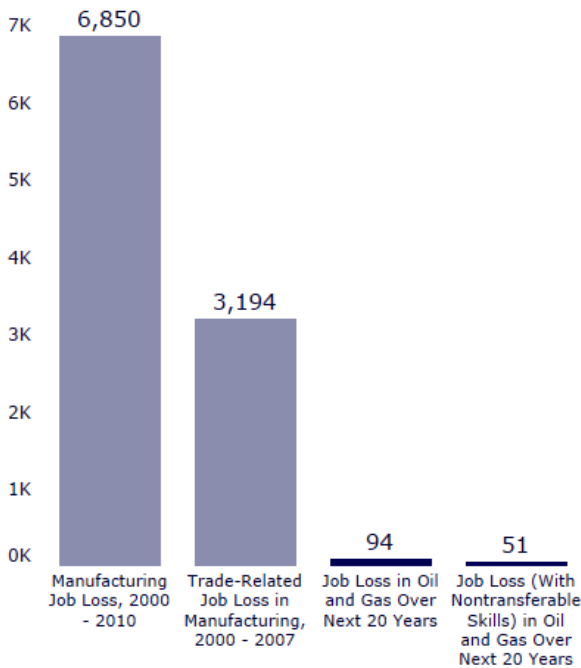
Source and notes: 2019 Quarterly Census on Employment and Wages



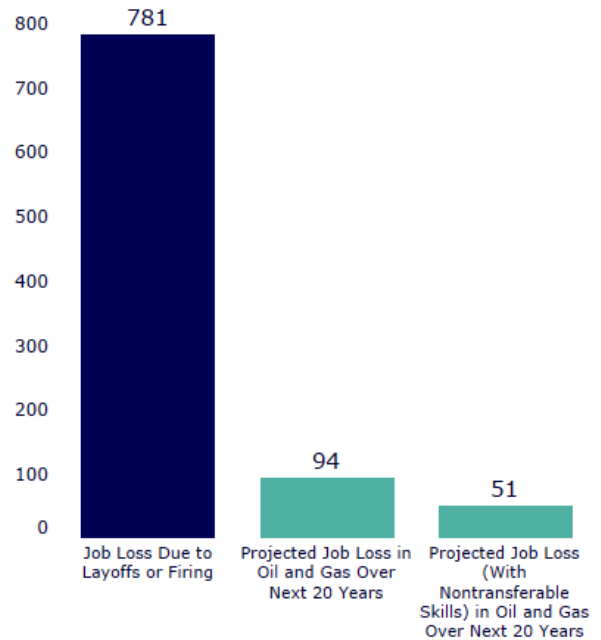
Employment Breakdown



Oregon Annual Job Loss in Manufacturing vs Fossil Fuel Industries



Oregon Projected Annual Job Loss in the Fossil Fuel Industry Compared to Daily Job Loss Due to Layoffs or Firing



Source and Notes: 2019 Quarterly Census on Employment and Wages.



Oregon

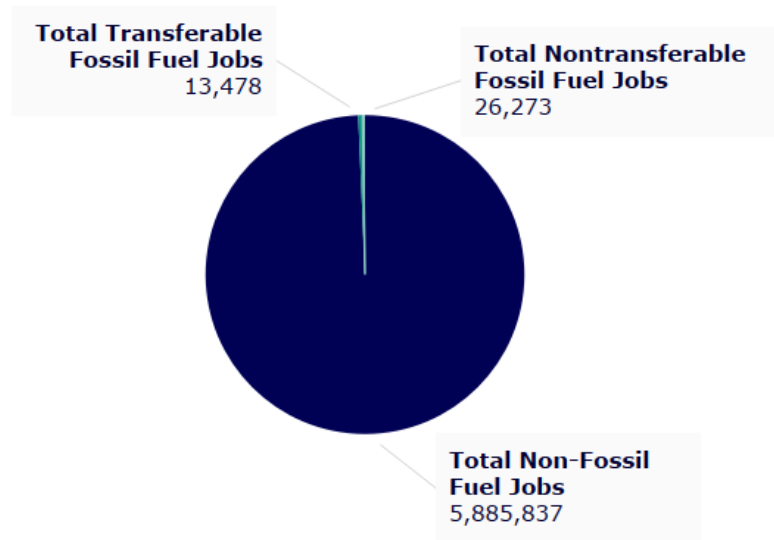
Fossil Fuel Industry	Employment	Nontransferable Jobs (percent)	
Drilling Oil and Gas wells	0	33.5	0
Support Activities for Oil and Gas Operations	0	75.5	0
Natural Gas Distribution	0	44.1	68
Oil and Gas Pipeline Construction	301	81.1	147
Petroleum Refineries	0	65.7	0
Mining and Oil and Gas Field Machinery	82	59.2	0
Petroleum Merchant Wholesalers	1138	44.6	49
Pipeline Transportation of Crude Oil	0	63.1	0
Pipeline Transportation of Natural Gas	107	63.1	244

Source and notes: 2019 Quarterly Census on Employment and Wages

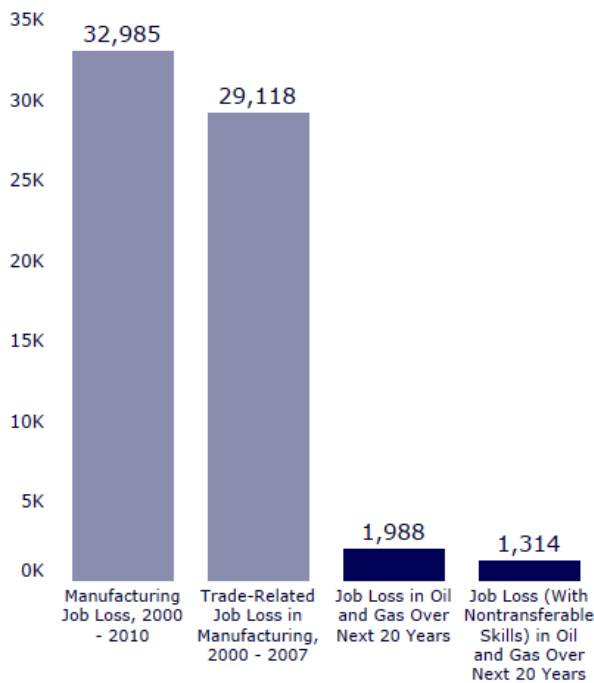


Pennsylvania

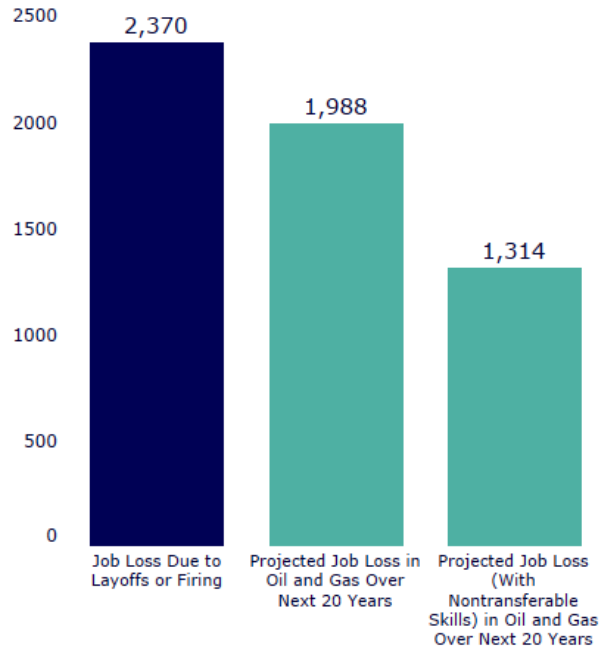
Employment Breakdown



Pennsylvania Annual Job Loss in Manufacturing vs Fossil Fuel Industries



Pennsylvania Projected Annual Job Loss in the Fossil Fuel Industry Compared to Daily Job Loss Due to Layoffs or Firing



Source and Notes: 2019 Quarterly Census on Employment and Wages.

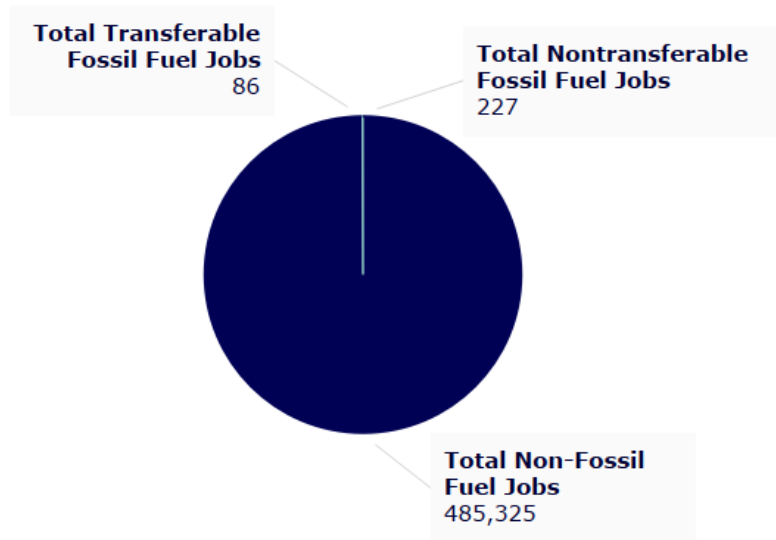


Pennsylvania

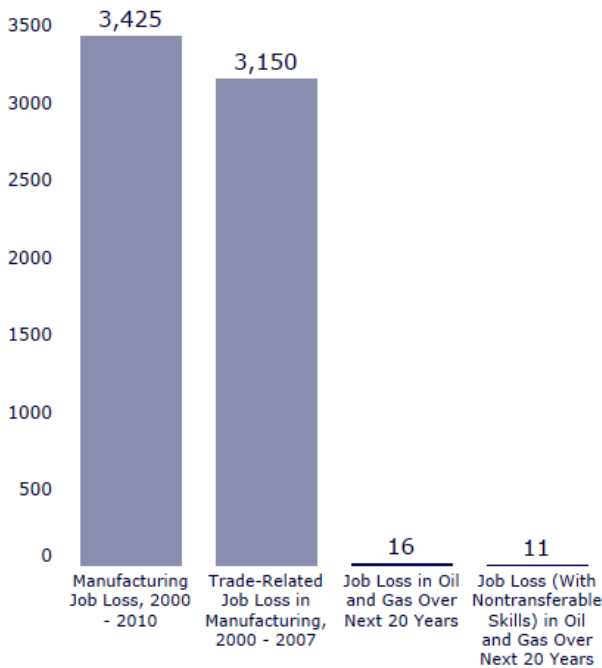
Fossil Fuel Industry	Employment	Nontransferable Jobs (percent)	
Drilling Oil and Gas wells	1764	33.5	591
Support Activities for Oil and Gas Operations	11026	75.5	8325
Natural Gas Distribution	4774	44.1	1138
Oil and Gas Pipeline Construction	11106	81.1	1502
Petroleum Refineries	1702	65.7	1118
Mining and Oil and Gas Field Machinery	1832	59.2	2105
Petroleum Merchant Wholesalers	3144	44.6	1085
Pipeline Transportation of Crude Oil	0	63.1	0
Pipeline Transportation of Natural Gas	1804	63.1	9007

Source and notes: 2019 Quarterly Census on Employment and Wages

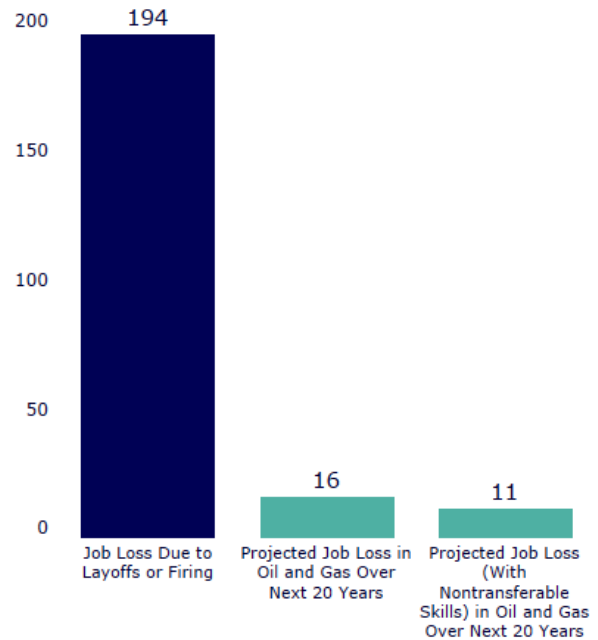




Rhode Island Annual Job Loss in Manufacturing vs Fossil Fuel Industries



Rhode Island Projected Annual Job Loss in the Fossil Fuel Industry Compared to Daily Job Loss Due to Layoffs or Firing



Source and Notes: 2019 Quarterly Census on Employment and Wages.



Rhode Island

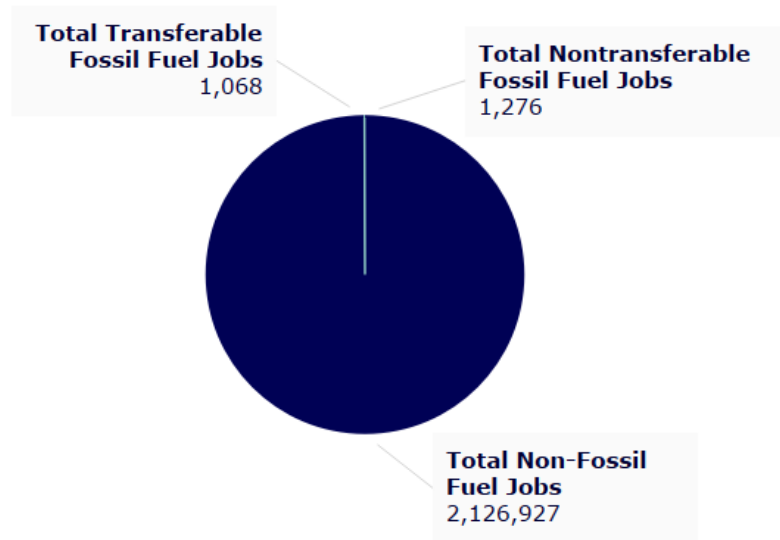
Fossil Fuel Industry	Employment	Nontransferable Jobs (percent)	
Drilling Oil and Gas wells	0	33.5	0
Support Activities for Oil and Gas Operations	0	75.5	0
Natural Gas Distribution	0	44.1	0
Oil and Gas Pipeline Construction	196	81.1	68
Petroleum Refineries	0	65.7	0
Mining and Oil and Gas Field Machinery	0	59.2	0
Petroleum Merchant Wholesalers	0	44.6	0
Pipeline Transportation of Crude Oil	0	63.1	0
Pipeline Transportation of Natural Gas	0	63.1	159

Source and notes: 2019 Quarterly Census on Employment and Wages

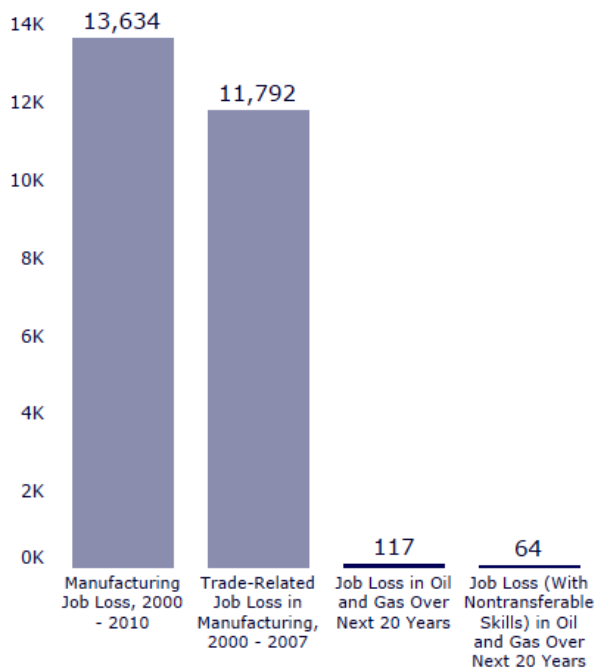


South Carolina

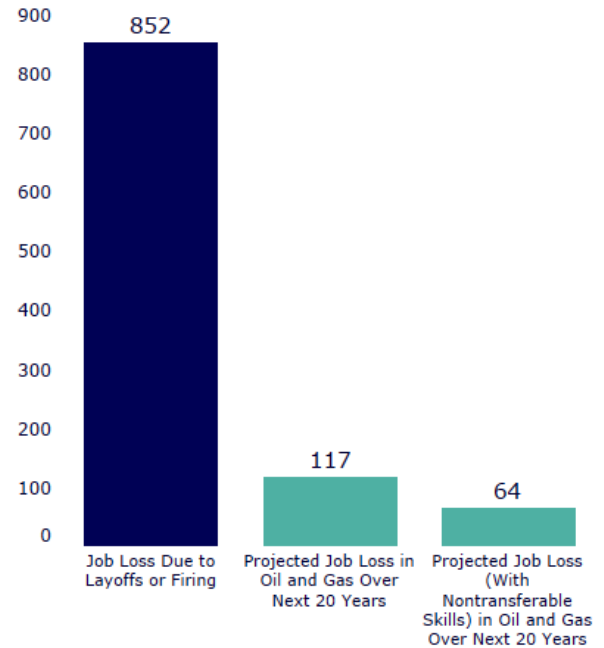
Employment Breakdown



South Carolina Annual Job Loss in Manufacturing vs Fossil Fuel Industries



South Carolina Projected Annual Job Loss in the Fossil Fuel Industry Compared to Daily Job Loss Due to Layoffs or Firing



Source and Notes: 2019 Quarterly Census on Employment and Wages.



South Carolina

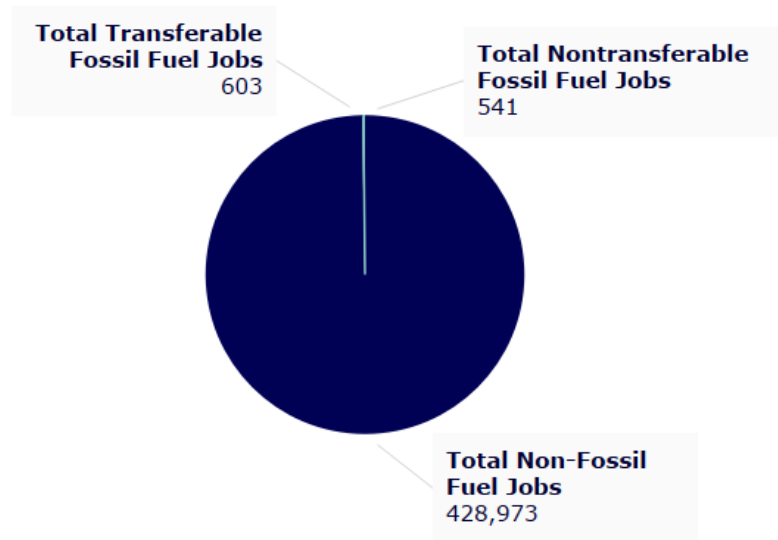
Fossil Fuel Industry	Employment	Nontransferable Jobs (percent)	
Drilling Oil and Gas wells	45	33.5	15
Support Activities for Oil and Gas Operations	92	75.5	69
Natural Gas Distribution	404	44.1	0
Oil and Gas Pipeline Construction	565	81.1	0
Petroleum Refineries	13	65.7	9
Mining and Oil and Gas Field Machinery	0	59.2	178
Petroleum Merchant Wholesalers	1225	44.6	0
Pipeline Transportation of Crude Oil	0	63.1	0
Pipeline Transportation of Natural Gas	0	63.1	458

Source and notes: 2019 Quarterly Census on Employment and Wages

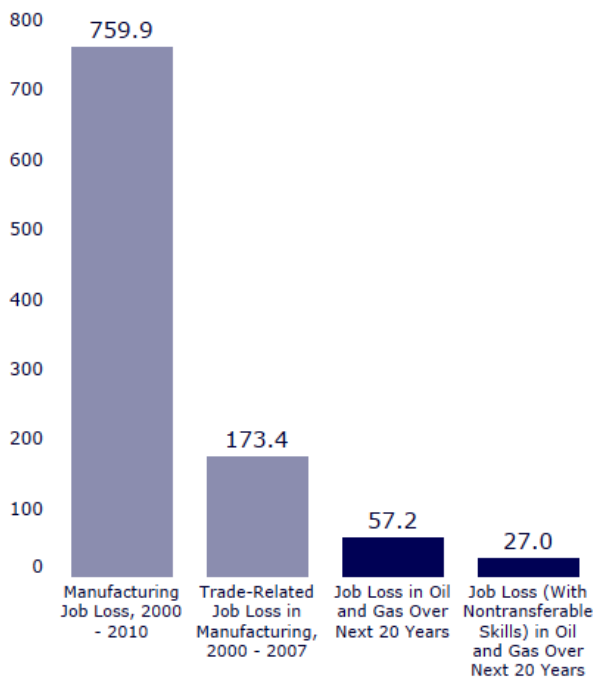


South Dakota

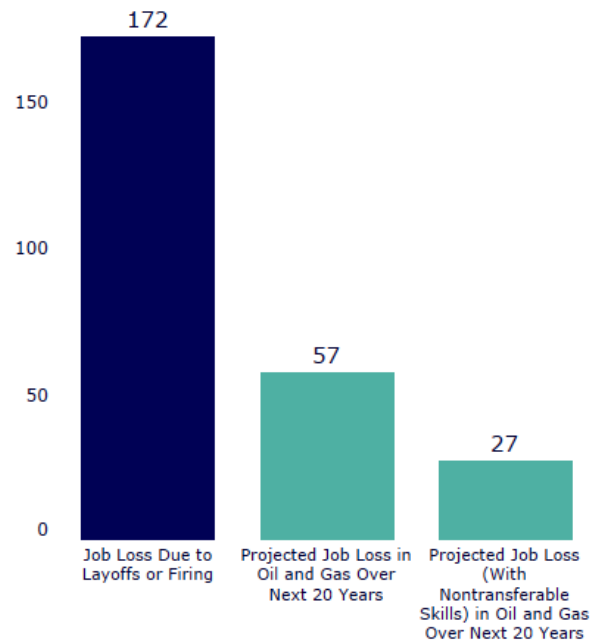
Employment Breakdown



South Dakota Annual Job Loss in Manufacturing vs Fossil Fuel Industries



South Dakota Projected Annual Job Loss in the Fossil Fuel Industry Compared to Daily Job Loss Due to Layoffs or Firing



Source and Notes: 2019 Quarterly Census on Employment and Wages.



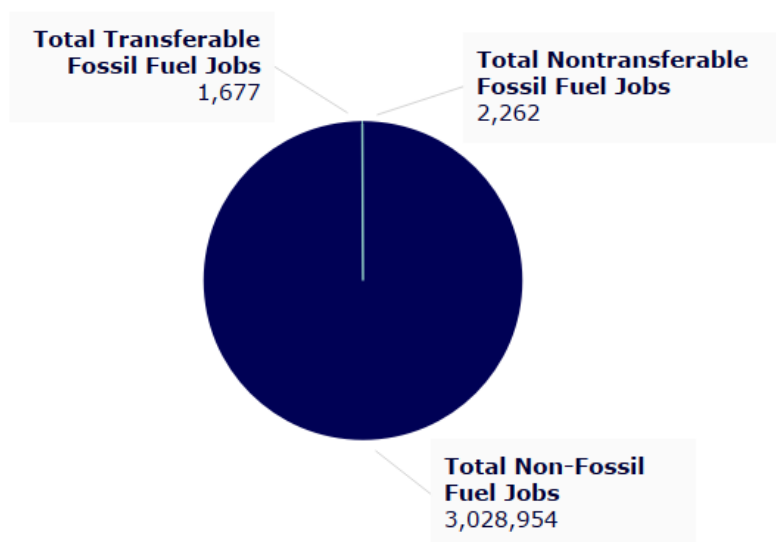
South Dakota

Fossil Fuel Industry	Employment	Nontransferable Jobs (percent)	
Drilling Oil and Gas wells	0	33.5	0
Support Activities for Oil and Gas Operations	32	75.5	24
Natural Gas Distribution	196	44.1	37
Oil and Gas Pipeline Construction	30	81.1	0
Petroleum Refineries	0	65.7	0
Mining and Oil and Gas Field Machinery	0	59.2	86
Petroleum Merchant Wholesalers	828	44.6	0
Pipeline Transportation of Crude Oil	0	63.1	0
Pipeline Transportation of Natural Gas	58	63.1	24

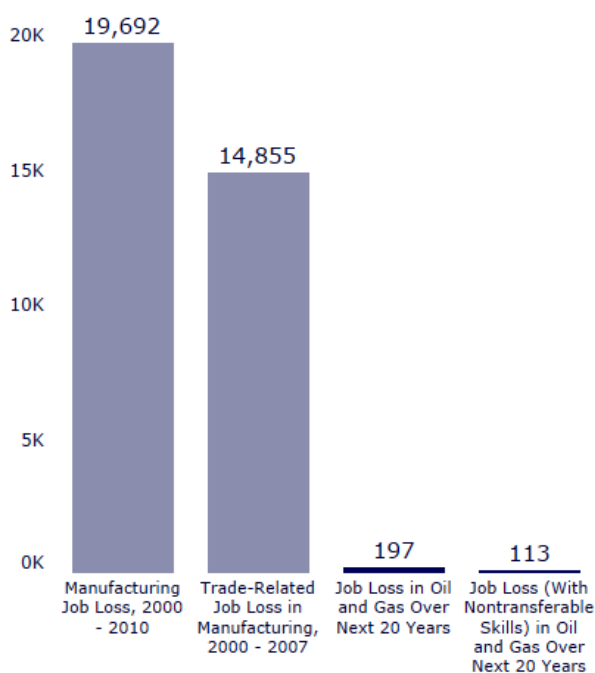
Source and notes: 2019 Quarterly Census on Employment and Wages



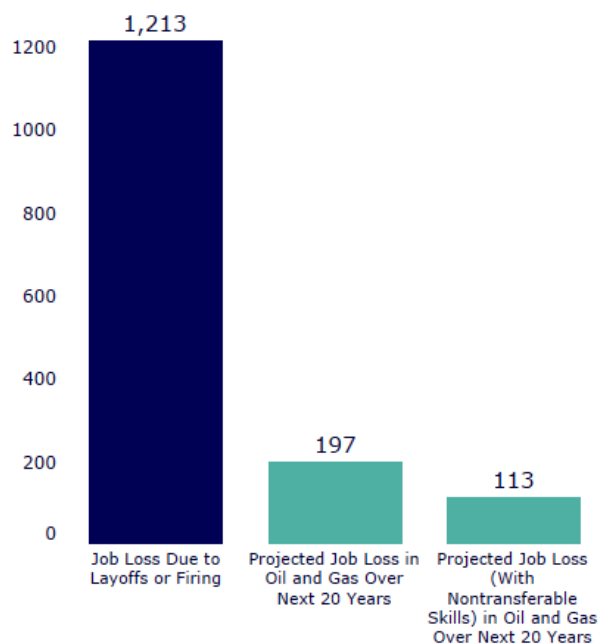
Employment Breakdown



Tennessee Annual Job Loss in Manufacturing vs Fossil Fuel Industries



Tennessee Projected Annual Job Loss in the Fossil Fuel Industry Compared to Daily Job Loss Due to Layoffs or Firing



Source and Notes: 2019 Quarterly Census on Employment and Wages.



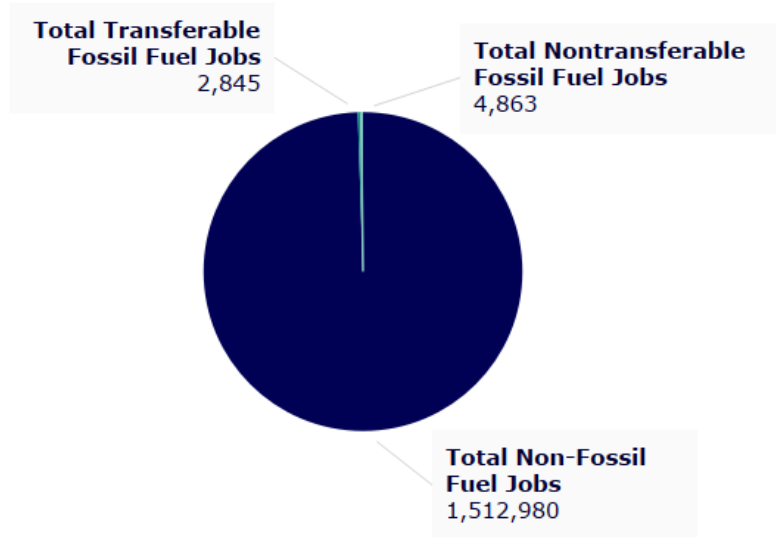
Tennessee

Fossil Fuel Industry	Employment	Nontransferable Jobs (percent)	
Drilling Oil and Gas wells	79	33.5	26
Support Activities for Oil and Gas Operations	75	75.5	57
Natural Gas Distribution	575	44.1	192
Oil and Gas Pipeline Construction	1162	81.1	12
Petroleum Refineries	0	65.7	0
Mining and Oil and Gas Field Machinery	62	59.2	254
Petroleum Merchant Wholesalers	1655	44.6	37
Pipeline Transportation of Crude Oil	5	63.1	3
Pipeline Transportation of Natural Gas	305	63.1	942

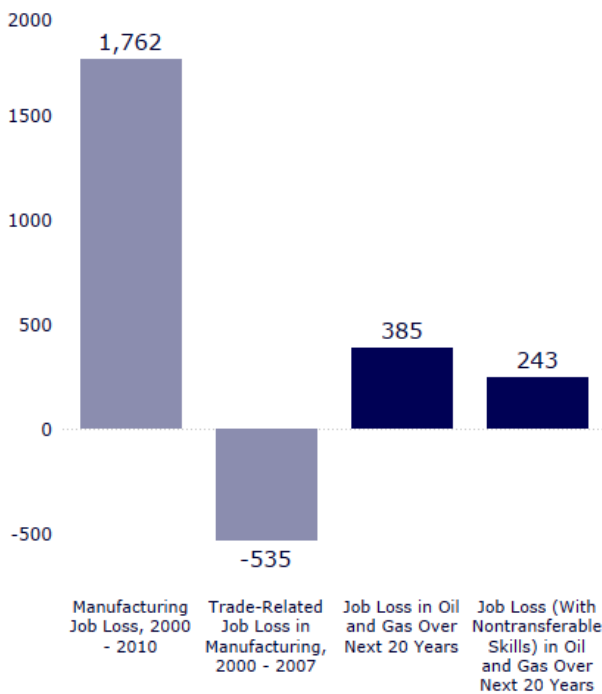
Source and notes: 2019 Quarterly Census on Employment and Wages



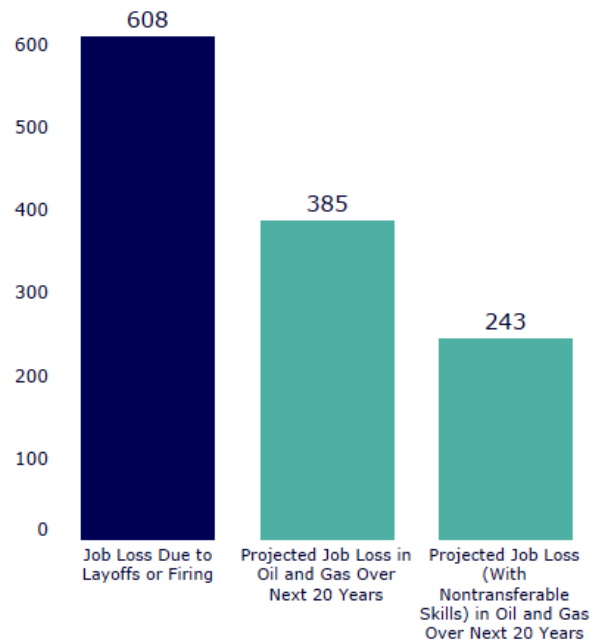
Employment Breakdown



Utah Annual Job Loss in Manufacturing vs Fossil Fuel Industries



Utah Projected Annual Job Loss in the Fossil Fuel Industry Compared to Daily Job Loss Due to Layoffs or Firing



Source and Notes: 2019 Quarterly Census on Employment and Wages.

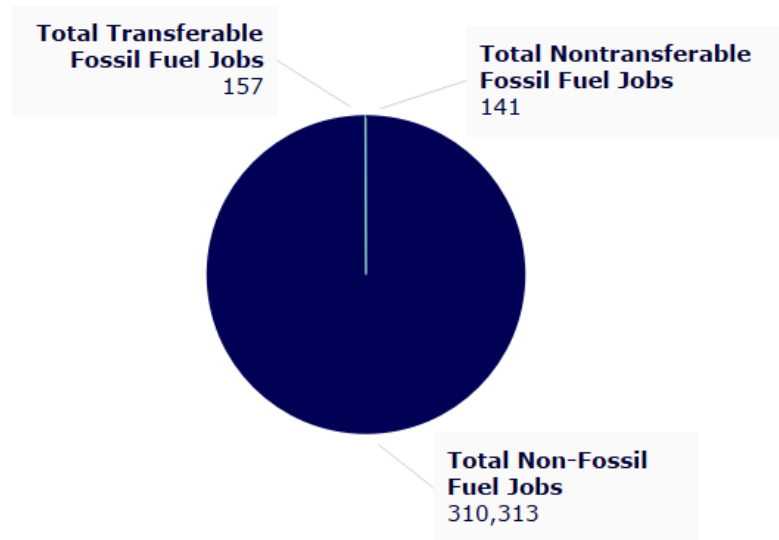


Utah

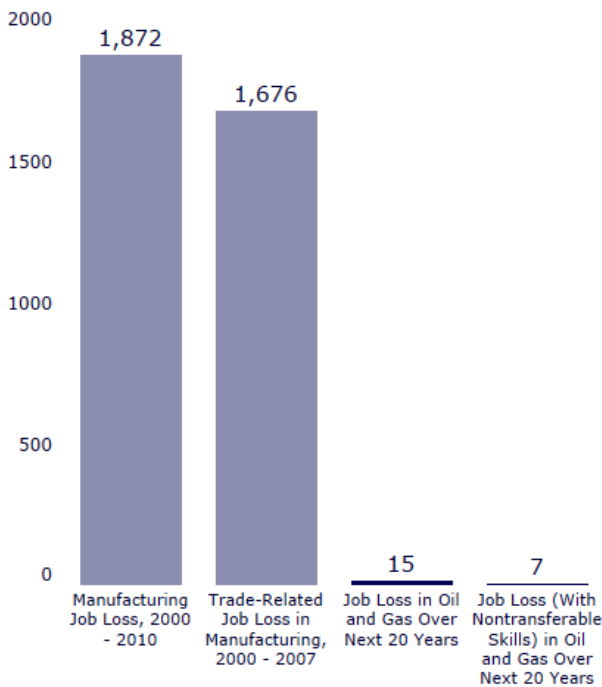
Fossil Fuel Industry	Employment	Nontransferable Jobs (percent)	
Drilling Oil and Gas wells	344	33.5	115
Support Activities for Oil and Gas Operations	2293	75.5	1731
Natural Gas Distribution	676	44.1	117
Oil and Gas Pipeline Construction	596	81.1	577
Petroleum Refineries	1280	65.7	841
Mining and Oil and Gas Field Machinery	695	59.2	298
Petroleum Merchant Wholesalers	624	44.6	411
Pipeline Transportation of Crude Oil	16	63.1	10
Pipeline Transportation of Natural Gas	186	63.1	483

Source and notes: 2019 Quarterly Census on Employment and Wages

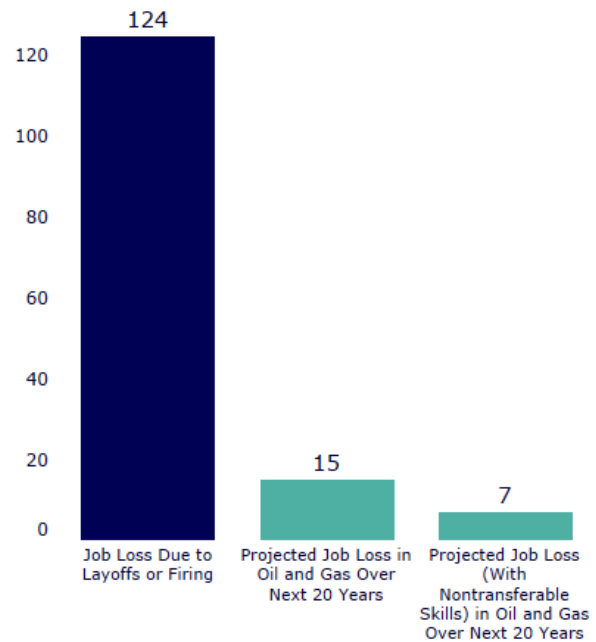




Vermont Annual Job Loss in Manufacturing vs Fossil Fuel Industries



Vermont Projected Annual Job Loss in the Fossil Fuel Industry Compared to Daily Job Loss Due to Layoffs or Firing



Source and Notes: 2019 Quarterly Census on Employment and Wages.

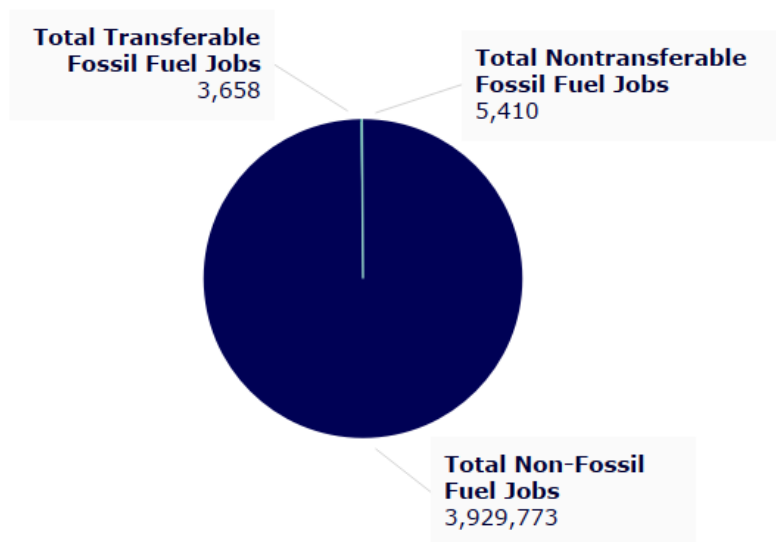


Vermont

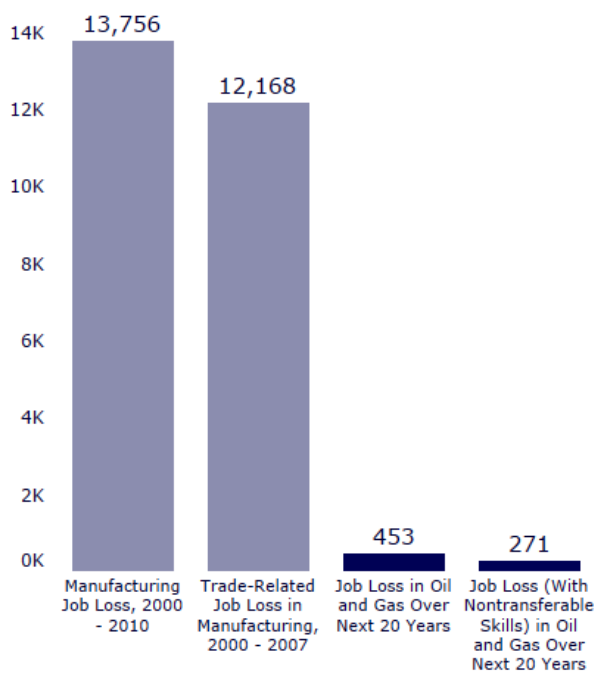
Fossil Fuel Industry	Employment	Nontransferable Jobs (percent)	
Drilling Oil and Gas wells	0	33.5	0
Support Activities for Oil and Gas Operations	0	75.5	0
Natural Gas Distribution	0	44.1	0
Oil and Gas Pipeline Construction	23	81.1	0
Petroleum Refineries	0	65.7	0
Mining and Oil and Gas Field Machinery	0	59.2	0
Petroleum Merchant Wholesalers	275	44.6	0
Pipeline Transportation of Crude Oil	0	63.1	0
Pipeline Transportation of Natural Gas	0	63.1	19

Source and notes: 2019 Quarterly Census on Employment and Wages

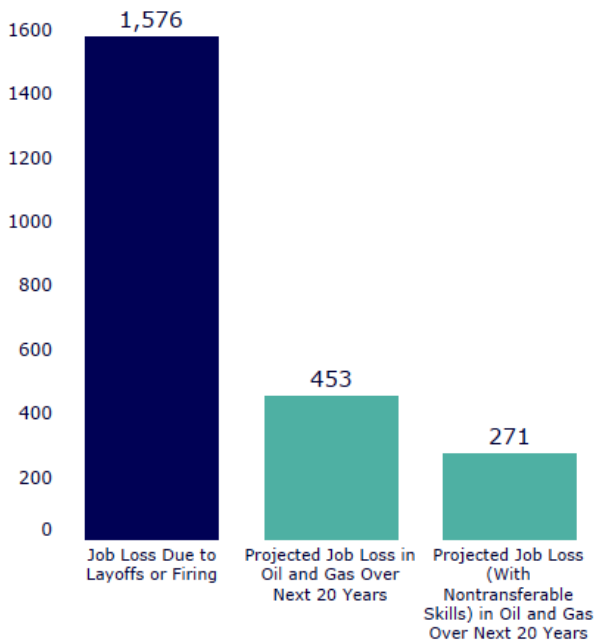




Virginia Annual Job Loss in Manufacturing vs Fossil Fuel Industries



Virginia Projected Annual Job Loss in the Fossil Fuel Industry Compared to Daily Job Loss Due to Layoffs or Firing



Source and Notes: 2019 Quarterly Census on Employment and Wages.

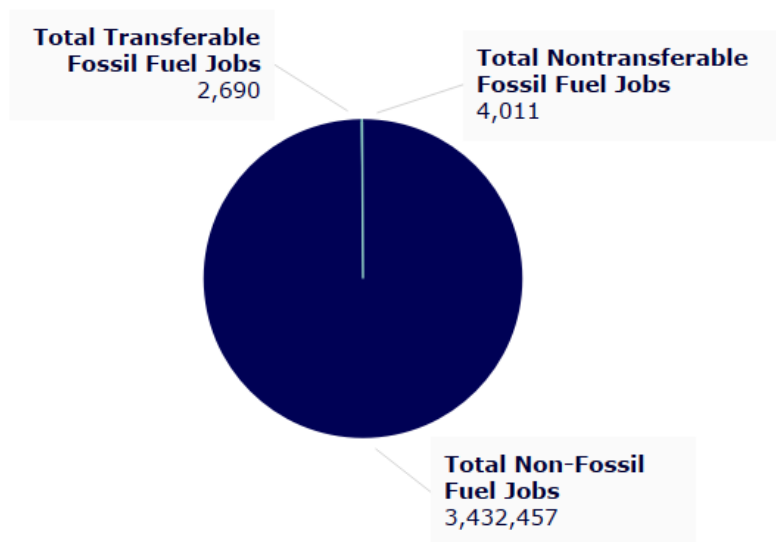


Virginia

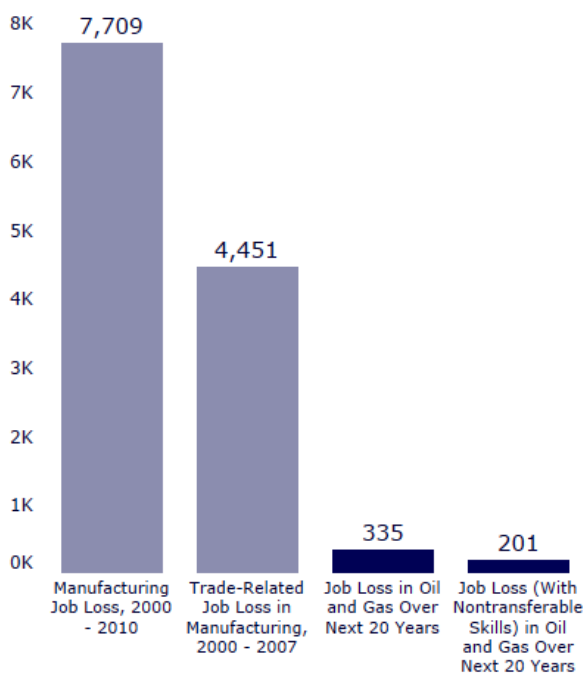
Fossil Fuel Industry	Employment	Nontransferable Jobs (percent)	
Drilling Oil and Gas wells	181	33.5	61
Support Activities for Oil and Gas Operations	247	75.5	186
Natural Gas Distribution	1783	44.1	216
Oil and Gas Pipeline Construction	2706	81.1	566
Petroleum Refineries	0	65.7	0
Mining and Oil and Gas Field Machinery	948	59.2	786
Petroleum Merchant Wholesalers	1882	44.6	561
Pipeline Transportation of Crude Oil	0	63.1	0
Pipeline Transportation of Natural Gas	342	63.1	2195

Source and notes: 2019 Quarterly Census on Employment and Wages

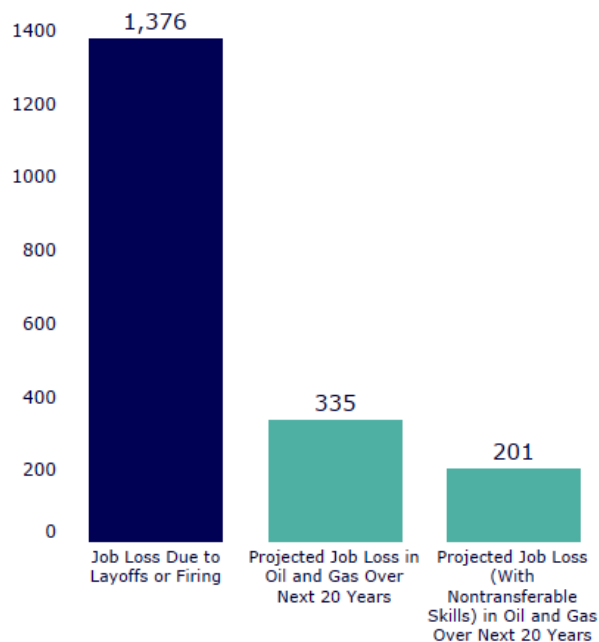




Washington Annual Job Loss in Manufacturing vs Fossil Fuel Industries



Washington Projected Annual Job Loss in the Fossil Fuel Industry Compared to Daily Job Loss Due to Layoffs or Firing



Source and Notes: 2019 Quarterly Census on Employment and Wages.

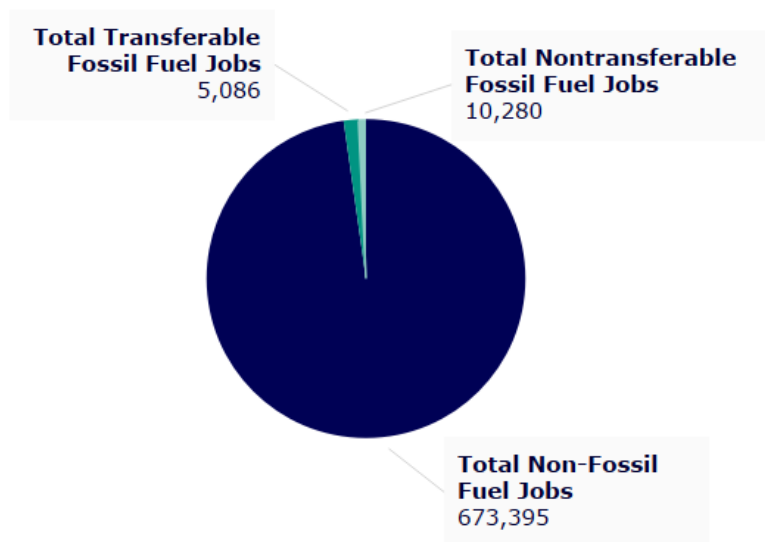


Washington

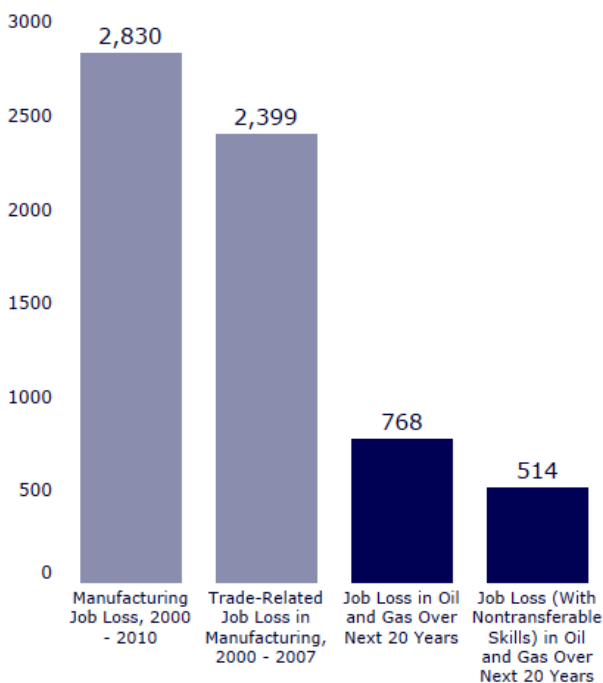
Fossil Fuel Industry	Employment	Nontransferable Jobs (percent)	
Drilling Oil and Gas wells	43	33.5	14
Support Activities for Oil and Gas Operations	0	75.5	0
Natural Gas Distribution	715	44.1	0
Oil and Gas Pipeline Construction	1425	81.1	140
Petroleum Refineries	2183	65.7	1434
Mining and Oil and Gas Field Machinery	124	59.2	315
Petroleum Merchant Wholesalers	1968	44.6	73
Pipeline Transportation of Crude Oil	0	63.1	0
Pipeline Transportation of Natural Gas	0	63.1	1156

Source and notes: 2019 Quarterly Census on Employment and Wages

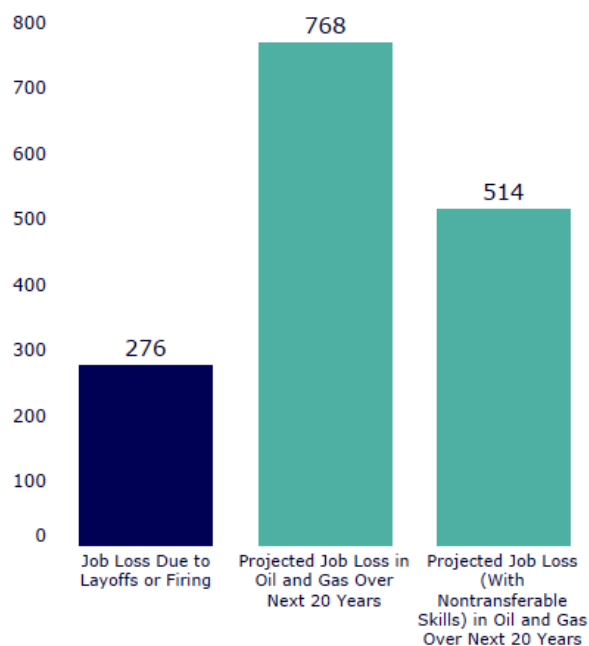




West Virginia Annual Job Loss in Manufacturing vs Fossil Fuel Industries



West Virginia Projected Annual Job Loss in the Fossil Fuel Industry Compared to Daily Job Loss Due to Layoffs or Firing



Source and Notes: 2019 Quarterly Census on Employment and Wages.



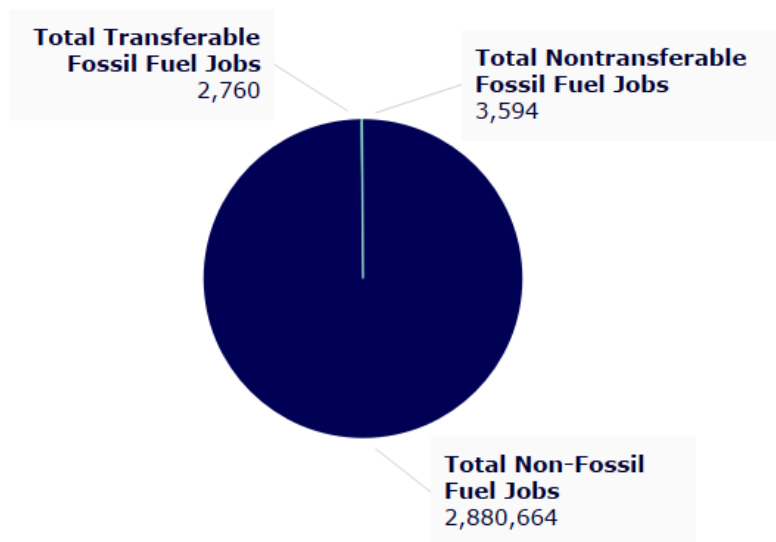
West Virginia

Fossil Fuel Industry	Employment	Nontransferable Jobs (percent)	
Drilling Oil and Gas wells	1444	33.5	484
Support Activities for Oil and Gas Operations	2905	75.5	2193
Natural Gas Distribution	733	44.1	0
Oil and Gas Pipeline Construction	6041	81.1	1518
Petroleum Refineries	0	65.7	0
Mining and Oil and Gas Field Machinery	972	59.2	323
Petroleum Merchant Wholesalers	645	44.6	575
Pipeline Transportation of Crude Oil	0	63.1	0
Pipeline Transportation of Natural Gas	0	63.1	4899

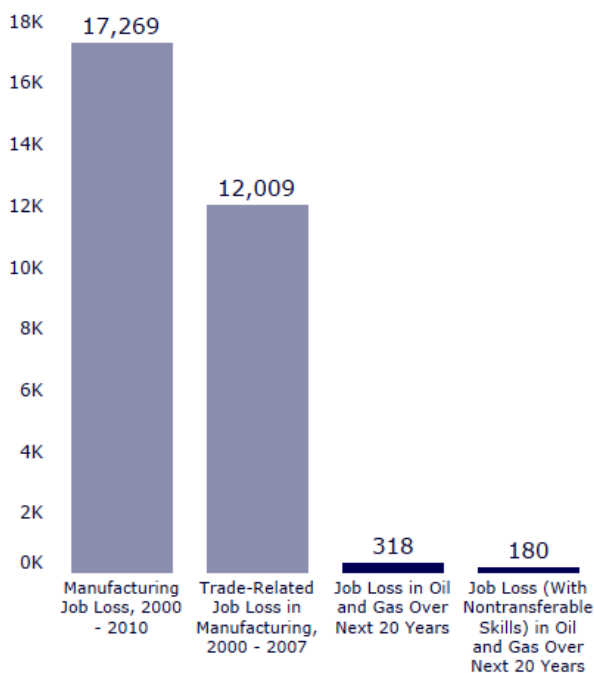
Source and notes: 2019 Quarterly Census on Employment and Wages



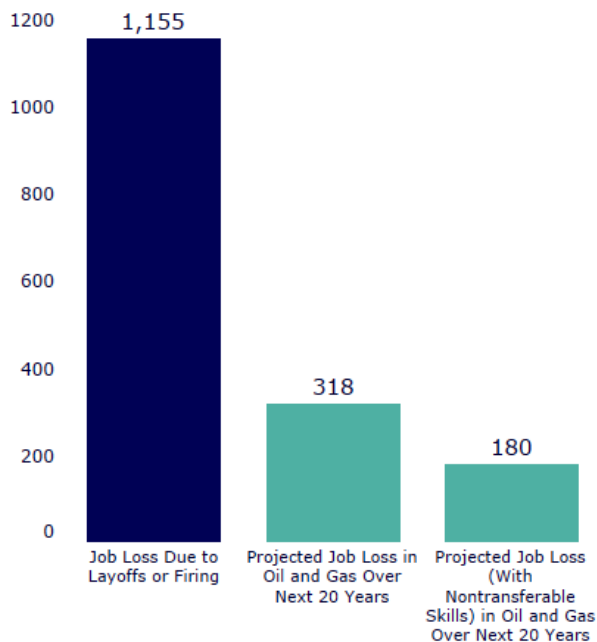
Employment Breakdown



Wisconsin Annual Job Loss in Manufacturing vs Fossil Fuel Industries



Wisconsin Projected Annual Job Loss in the Fossil Fuel Industry Compared to Daily Job Loss Due to Layoffs or Firing



Source and Notes: 2019 Quarterly Census on Employment and Wages.

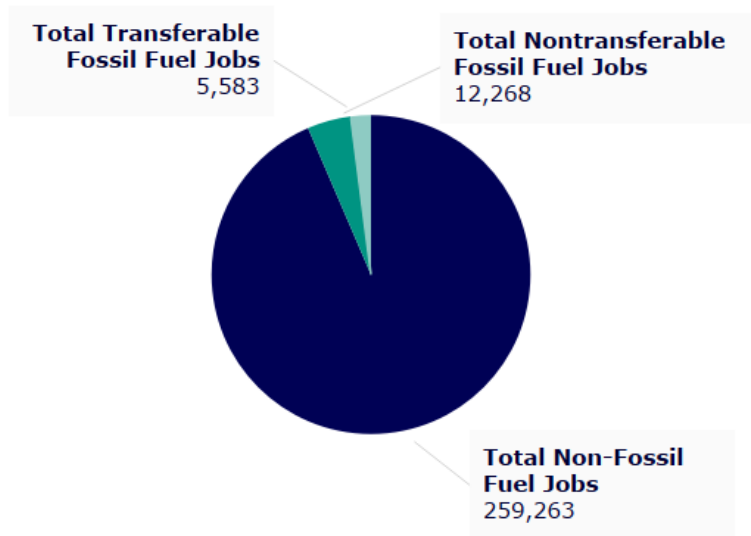


Wisconsin

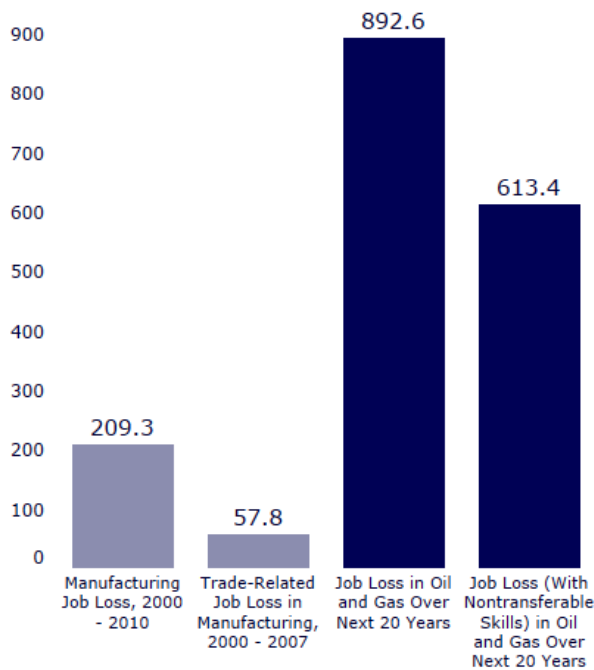
Fossil Fuel Industry	Employment	Nontransferable Jobs (percent)	
Drilling Oil and Gas wells	0	33.5	0
Support Activities for Oil and Gas Operations	15	75.5	11
Natural Gas Distribution	812	44.1	0
Oil and Gas Pipeline Construction	1005	81.1	1721
Petroleum Refineries	0	65.7	0
Mining and Oil and Gas Field Machinery	0	59.2	358
Petroleum Merchant Wholesalers	1544	44.6	0
Pipeline Transportation of Crude Oil	0	63.1	0
Pipeline Transportation of Natural Gas	0	63.1	815

Source and notes: 2019 Quarterly Census on Employment and Wages

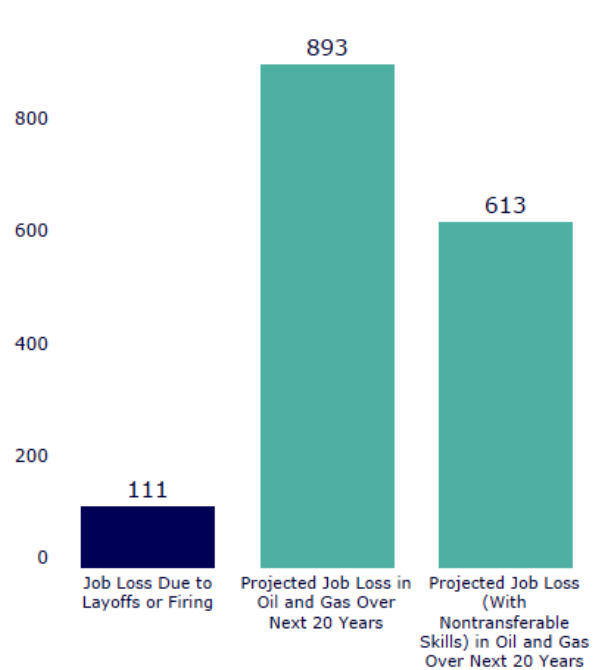




Wyoming Annual Job Loss in Manufacturing vs Fossil Fuel Industries



Wyoming Projected Annual Job Loss in the Fossil Fuel Industry Compared to Daily Job Loss Due to Layoffs or Firing



Source and Notes: 2019 Quarterly Census on Employment and Wages.



Wyoming

Fossil Fuel Industry	Employment	Nontransferable Jobs (percent)	
Drilling Oil and Gas wells	1683	33.5	564
Support Activities for Oil and Gas Operations	7971	75.5	6018
Natural Gas Distribution	330	44.1	351
Oil and Gas Pipeline Construction	3995	81.1	688
Petroleum Refineries	1268	65.7	833
Mining and Oil and Gas Field Machinery	313	59.2	146
Petroleum Merchant Wholesalers	544	44.6	185
Pipeline Transportation of Crude Oil	0	63.1	0
Pipeline Transportation of Natural Gas	557	63.1	3240

Source and notes: 2019 Quarterly Census on Employment and Wages



References

Databases, Tables & Calculators by Subject. US Bureau of Labor Statistics, <https://www.bls.gov/data/#employment>.

Job Openings and Labor Turnover Survey. US Bureau of Labor Statistics, <https://www.bls.gov/jlt/>.

National Employment Matrix. US Bureau of Labor Statistics, <https://data.bls.gov/projections/nationalMatrixHome?ioType=o>.

Quarterly Census of Employment and Wages. US Bureau of Labor Statistics, <https://www.bls.gov/cew/>.



Appendix

The calculations for the percentage of workers who were in occupations with nontransferable skills are derived from the National Employment Matrix, which shows employment by occupation for each industry.

The occupations where skills were considered nontransferable are:

- Building and grounds cleaning and maintenance occupations
- Office and administrative support occupations
- Construction and extraction occupations
- Installation, maintenance, and repair occupations
- Production occupations

The National Employment Matrix only provides data for the utility system construction as a whole. Oil and gas utility system construction accounts for roughly one-third of this industry. The calculations assume that the breakdown by occupation for this portion of the industry is the same as for the industry as a whole.

The Current Employment Statistics series only gives employment data for the pipeline sector as a whole, while the National Employment Matrix breaks out occupational data separately for oil pipelines and natural gas pipelines. To combine these, the occupational breakdown was weighted by the employment in the two sectors as indicated in the National Employment Matrix (12,300 and 30,400, respectively).

Table A1**Oil and Gas Extraction**

	Employment (percent)	
Management occupations	11.6	16,658
Business and financial operations occupations	13.7	19,673
Computer and mathematical operations	7.3	10,483
Architecture and engineering operations	13.1	18,812
Life, physical, and social science operations	6.3	9,047
Legal occupations	1.9	2,728
Arts, design, entertainment, sports, and media occupations	0.2	287
Protective service operations	0.2	287
* Building and grounds cleaning and maintenance occupations	0.2	287
Sales and related occupations	2.1	3,016
Office and administrative support occupations	10.1	14,504
* Construction and extraction occupations	14.5	20,822
* Installation, maintenance, and repair occupations	3.9	5,600
* Production occupations	6.4	9,190
* Transportation and material moving occupations	8.5	12206

Source and notes: Bureau of Labor Statistics, National Employment Matrix.

* indicates nontransferable

Table A2**Utility System Construction**

	Employment (percent)	
Management occupations	6.4	10,963
Business and financial operations occupations	2.7	4,625
Computer and mathematical operations	0.4	685
Architecture and engineering operations	1.3	2,227
Life, physical, and social science operations	0.5	857
Legal occupations	0.1	171
Arts, design, entertainment, sports, and media occupations	0.0	-
Protective service operations	0.2	343
* Building and grounds cleaning and maintenance occupations	0.2	343
Sales and related occupations	0.6	1,028
Office and administrative support occupations	6.6	11,306
* Construction and extraction occupations	57.1	97,812
* Installation, maintenance, and repair occupations	15.3	26,209
* Production occupations	4.0	6,852
* Transportation and material moving occupations	4.5	7709

Source and notes: Bureau of Labor Statistics, National Employment Matrix.

* indicates nontransferable



Table A3**Support Activities for Mining**

	Employment (percent)	
Management occupations	5.2	14,040
Business and financial operations occupations	3.1	8,370
Computer and mathematical operations	0.5	1,350
Architecture and engineering operations	3.5	9,450
Life, physical, and social science operations	2.6	7,020
Legal occupations	0.2	540
Arts, design, entertainment, sports, and media occupations	0.0	-
Protective service operations	0.1	270
* Building and grounds cleaning and maintenance occupations	0.2	540
Sales and related occupations	2.4	6,480
Office and administrative support occupations	6.9	18,630
* Construction and extraction occupations	49.4	133,380
* Installation, maintenance, and repair occupations	7.9	21,330
* Production occupations	5.4	14,580
* Transportation and material moving occupations	12.6	34,020

Source and notes: Bureau of Labor Statistics, National Employment Matrix.

* indicates nontransferable

Table A4**Petroleum and Coal Products Manufacturing**

	Employment (percent)	
Management occupations	6.4	4,403
Business and financial operations occupations	5.4	3,715
Computer and mathematical operations	1.2	826
Architecture and engineering operations	9.1	6,261
Life, physical, and social science operations	5.1	3,509
Legal occupations	0.1	69
Arts, design, entertainment, sports, and media occupations	0.2	138
Protective service operations	0.2	138
* Building and grounds cleaning and maintenance occupations	0.2	138
Sales and related occupations	1.8	1,238
Office and administrative support occupations	5.8	3,990
* Construction and extraction occupations	7.5	5,160
* Installation, maintenance, and repair occupations	8.8	6,054
* Production occupations	41.4	28,483
* Transportation and material moving occupations	7.8	5,366

Source and notes: Bureau of Labor Statistics, National Employment Matrix.

* indicates nontransferable

Table A5**Pipeline Transportation of Crude Oil**

	Employment (percent)
Management occupations	9.0
Business and financial operations occupations	10.9
Computer and mathematical operations	2.5
Architecture and engineering operations	8.0
Life, physical, and social science operations	2.2
Legal occupations	0.1
Arts, design, entertainment, sports, and media occupations	2.4
Protective service operations	0.1
* Building and grounds cleaning and maintenance occupations	0.8
Sales and related occupations	1.1
Office and administrative support occupations	8.1
* Construction and extraction occupations	5.6
* Installation, maintenance, and repair occupations	12.8
* Production occupations	23.7
* Transportation and material moving occupations	14.0

Source and notes: Bureau of Labor Statistics, National Employment Matrix.

* indicates nontransferable

Table A6**Pipeline Transportation of Natural Gas**

	Employment (percent)
Management occupations	8.0
Business and financial operations occupations	7.6
Computer and mathematical operations	2.0
Architecture and engineering operations	8.5
Life, physical, and social science operations	1.3
Legal occupations	0.4
Arts, design, entertainment, sports, and media occupations	0.3
Protective service operations	
* Building and grounds cleaning and maintenance occupations	
Sales and related occupations	0.6
Office and administrative support occupations	5.4
* Construction and extraction occupations	7.3
* Installation, maintenance, and repair occupations	18.8
* Production occupations	31.0
* Transportation and material moving occupations	8.9

Source and notes: Bureau of Labor Statistics, National Employment Matrix.

* indicates nontransferable



Table A7**Pipeline Combined**

	Employment (percent)	
Management occupations	8.3	4,268
Business and financial operations occupations	8.6	4,404
Computer and mathematical operations	2.1	1,104
Architecture and engineering operations	8.4	4,303
Life, physical, and social science operations	1.6	803
Legal occupations	0.3	161
Arts, design, entertainment, sports, and media occupations	0.9	466
Protective service operations	0.0	15
* Building and grounds cleaning and maintenance occupations	0.2	119
Sales and related occupations	0.7	383
Office and administrative support occupations	6.2	3,182
* Construction and extraction occupations	6.8	3,507
* Installation, maintenance, and repair occupations	17.1	8,792
* Production occupations	28.9	14,882
* Transportation and material moving occupations	10.4	5,340

Source and notes: Bureau of Labor Statistics, National Employment Matrix.

* indicates nontransferable

Table A8**Fossil Fuel Electric Power Generation**

	Employment (percent)	
Management occupations	7.8	6,482
Business and financial operations occupations	8.3	6,897
Computer and mathematical operations	3.9	3,241
Architecture and engineering operations	8.0	6,648
Life, physical, and social science operations	2.1	1,745
Legal occupations	0.4	332
Arts, design, entertainment, sports, and media occupations	0.3	249
Protective service operations	0.5	416
* Building and grounds cleaning and maintenance occupations	0.2	166
Sales and related occupations	0.4	332
Office and administrative support occupations	10.2	8,476
* Construction and extraction occupations	4.6	3,823
* Installation, maintenance, and repair occupations	24.3	20,193
* Production occupations	26.4	21,938
* Transportation and material moving occupations	2.3	1,911

Source and notes: Bureau of Labor Statistics, National Employment Matrix.

* indicates nontransferable

Table A9**Natural Gas Distribution**

	Employment (percent)	
Management occupations	7.3	8,052
Business and financial operations occupations	13.8	15,221
Computer and mathematical operations	4.6	5,074
Architecture and engineering operations	7.1	7,831
Life, physical, and social science operations	0.8	882
Legal occupations	0.4	441
Arts, design, entertainment, sports, and media occupations	0.4	441
Protective service operations	0.1	110
* Building and grounds cleaning and maintenance occupations		-
Sales and related occupations	3.6	3,971
Office and administrative support occupations	17.8	19,633
* Construction and extraction occupations	10.1	11,140
* Installation, maintenance, and repair occupations	21.6	23,825
* Production occupations	10.3	11,361
* Transportation and material moving occupations	2.1	2,316

Source and notes: Bureau of Labor Statistics, National Employment Matrix.

* indicates nontransferable

Table A10**Merchant Wholesalers Oil (Non-Durable Goods)**

	Employment (percent)	
Management occupations	7.3	7,592
Business and financial operations occupations	4.9	5,096
Computer and mathematical operations	0.5	520
Architecture and engineering operations	0.2	208
Life, physical, and social science operations	0.7	728
Legal occupations	0.1	104
Arts, design, entertainment, sports, and media occupations	2.4	2,496
Healthcare practitioners and technical occupations	1.1	1,144
Protective service operations	0.1	104
* Building and grounds cleaning and maintenance occupations	0.8	832
Sales and related occupations	19.1	19,864
Office and administrative support occupations	16.0	16,640
* Construction and extraction occupations	0.2	208
* Installation, maintenance, and repair occupations	2.1	2,184
* Production occupations	5.5	5,720
* Transportation and material moving occupations	36.0	37,440

Source and notes: Bureau of Labor Statistics, National Employment Matrix.

* indicates nontransferable

Table A11**Machinery Manufacturing (3331,2,4,9)**

	Employment (percent)	
Management occupations	6.8	4,733
Business and financial operations occupations	5.2	3,619
Computer and mathematical operations	2.0	1,392
Architecture and engineering operations	10.5	7,308
Life, physical, and social science operations	0.3	209
Legal occupations	0.1	70
Arts, design, entertainment, sports, and media occupations	0.4	278
Protective service operations	0.0	-
* Building and grounds cleaning and maintenance occupations	0.3	209
Sales and related occupations	4.1	2,854
Office and administrative support occupations	8.6	5,986
* Construction and extraction occupations	1.5	1,044
* Installation, maintenance, and repair occupations	5.0	3,480
* Production occupations	50.1	34,870
* Transportation and material moving occupations	4.8	3,341

Source and notes: Bureau of Labor Statistics, National Employment Matrix.

* indicates nontransferable

