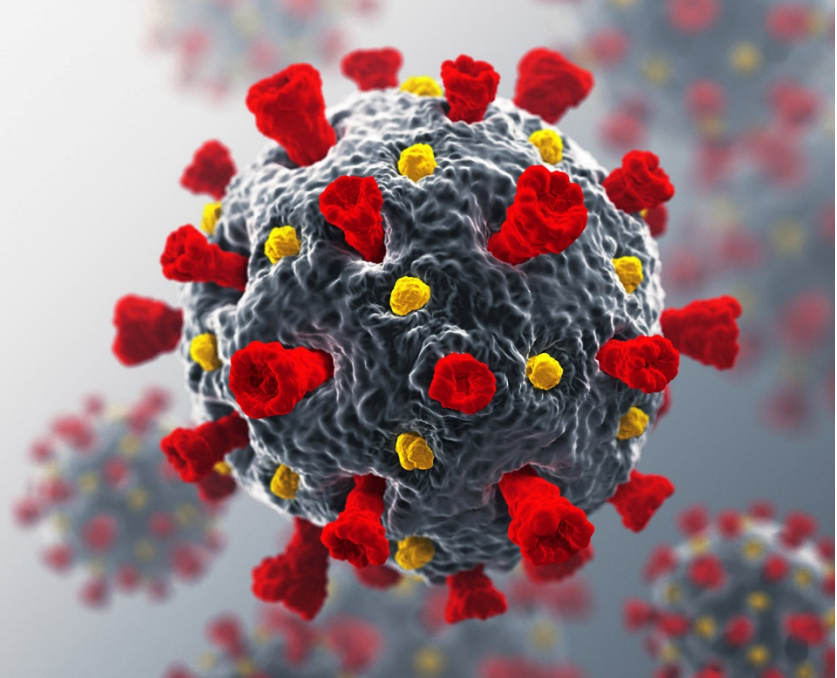


To: E2, E4TheFuture, and ACORE  
From: Philip Jordan  
Vice-President, BW Research Partnership  
Date: July 8, 2020

#### MEMORANDUM

Clean Energy Employment Initial Impacts from  
the COVID-19 Economic Crisis, June 2020



## INTRODUCTION

BW Research finds that the U.S. clean energy sector added 106,320 jobs in June, leaving over half a million (514,270) clean energy workers out of work despite nationwide re-openings. Despite the gains in June, there remains a nearly 15 percent decline over pre-COVID-19 employment levels.

We are relieved that after months of persistent job declines, some clean energy employees were able to return to work in June. While the topline number is an improvement for this month, we are concerned over the remaining high level of unemployment in the sector and by several underlying trends in the most recent jobs reports.

The July 2 jobs report, which showed that the U.S. economy created 4.8 million new jobs over the previous month, covers the period immediately following Memorial Day into mid-June, a time when most of the states were well into their economic reopening plans and very few restrictions were in place for construction, professional services, and manufacturing (the three largest segments of the clean energy economy). It is troubling that only about one in six clean energy jobs lost since March returned in the weeks following reopening. No state saw more than a 6.7 percent increase in clean energy jobs and most saw less than 3.5 percent growth under reopening. It is additionally concerning that since then, a majority of U.S. states have seen significant increases in viral spread and are therefore pausing or reversing their reopening plans. This will put immediate pressure on clean energy jobs and will blunt future potential recovery.

Another troubling trend is the rapidly increasing number of permanently unemployed workers. At the outset of the pandemic, most of the job losses were reported as temporary. The number of job losses classified by the Bureau of Labor Statistics as permanent losses has risen to 2.9 million, more than double the number from a year prior.

The weekly claims data raise additional warning signs for the economic recovery. Prior to March of this year, the record number of weekly initial unemployment claims was 700,000, yet even during the period of economic reopening, initial claims have plateaued at around 1.4 million each week. Later in June, continuing claims reversed their trend and started ticking up.

Finally, we recognize the importance of PPP for the clean energy sector. We estimate that as many as 2.3 million clean energy workers are employed by small businesses that received Paycheck Protection Program loans. As most of those funds have been exhausted on salaries over the last few months, we anticipate increasing layoffs at small clean energy businesses over the coming months.

## IMPACTS

Several recent analyses suggest that unemployment claims economy-wide do not represent the entirety of job losses, as many workers who are furloughed temporarily or are beneficiaries of the Paycheck Protection Program are not seeking other employment and therefore do not qualify for benefits. The data also do not include workers who had their hours slashed and are now significantly underemployed.

The June unemployment data shows jobs were regained in every clean energy sector.

- Energy efficiency, the largest clean energy sector, experienced a 4 percent gain in employment, with the addition of approximately 71,800 jobs. The energy efficiency sector continues to suffer from 360,000 job losses impacting a full 15 percent of its workforce. For more information on state level energy efficiency impacts, see Appendix E: State Energy Efficiency Job Growth in June 2020.
- Renewable electric power generation saw a 3.5 percent rise in employment, with nearly 17,300 jobs regained in June. A total of 82,400 renewable electric power generation workers (14 percent of the sector's workforce) remain unemployed due to the pandemic.
- Clean fuels and clean transmission, distribution, and storage saw smaller rebounds in June, gaining 2,400 and 4,600 jobs, respectively. The complete impact of the pandemic on clean fuels and clean transmission, distribution, and storage totals 10,900 and 22,800 lost jobs from their respective, pre-pandemic employment levels. Clean fuels jobs have dropped more than 10 percent since March, while clean transmission, distribution, and storage jobs have dropped nearly 16 percent thus far.
- Clean vehicles added back less than 5 percent of its workforce, or 10,300 jobs in June. The clean vehicles sector continues to experience a nearly 15 percent decline in jobs over its pre-COVID-19 employment levels. This translates to 38,200 ongoing job losses.

California had the largest increase in June, with 5 percent of its clean energy workforce or 19,800 jobs returning in June. Texas, Michigan, North Carolina, and Florida gained more than 5,800 clean energy jobs each in June. States that have fared better than average as a percent of their workforce include North Carolina, Michigan, and North Carolina, all growing about 6 percent or more in June. Alaska, Wyoming, New Hampshire, and Montana saw the smallest growth, all with less than 250 jobs gained over the past month. For growth by state, see Appendix A: State Clean Energy Job Growth in June 2020.

Counties that have lost more than 5,000 clean energy jobs since the beginning of March include Los Angeles County, CA; King County, WA; San Diego County, CA; Harris County, TX; Orange County, CA; Oakland County, MI; and Cook County, IL. The counties that suffered hardest as a percent of their workforce are Kern County, CA; Fulton County, GA; DeKalb County, GA; Dakota County, MN; and Fresno County, CA. For losses by county, see Appendix C: Cumulative County Clean Energy Job Losses.

The MSAs that have lost the most clean energy jobs are among the largest economic hubs in the US: Los Angeles-Long Beach-Santa Ana, CA MSA; New York-Northern New Jersey-Long Island, NY-NJ-PA MSA; Chicago-Naperville-Joliet, IL-IN-WI MSA; and San Francisco-Oakland-Fremont, CA MSA. MSAs that have been hit hard as a percentage of their workforce include Cleveland-Elyria-Mentor, OH MSA; Las Vegas-Paradise, NV MSA; Pittsburgh, PA MSA; New Orleans-Metairie-Kenner, LA MSA; and Los Angeles-Long Beach-Santa Ana, CA MSA. For losses by MSA, see Appendix D: Cumulative MSA Clean Energy Job Losses.

The BLS Employment Situation report shows us that in the overall economy racial and ethnic minorities, women, young workers, and those with less educational attainment are currently suffering higher unemployment rates.<sup>1</sup> While reporting demographic employment trends is fundamental to understanding the clean energy workforce, the data currently available is not granular enough to provide meaningful insights. BW Research is working to develop stronger analyses in order to contribute significant findings to this conversation.

## METHODOLOGY

BLS employment reports for May and June, as well as the DOL unemployment weekly summaries, were used to calculate the labor impacts for the month. Please see prior months' memoranda for a more complete explanation of the methodology.

## ABOUT BW RESEARCH

BW Research is a full-service applied research firm that is focused on supporting our clients with economic & workforce research, customer & community research, as well as strategic planning and evaluation services. For more information and analysis on economic impacts related to COVID-19, please visit: <http://bwresearch.com/covid>

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<sup>1</sup> <https://www.bls.gov/news.release/empsit.nr0.htm>

## APPENDIX A: STATE CLEAN ENERGY JOB GROWTH IN JUNE 2020

State	CE Job Growth	Percent Growth	State	CE Job Growth	Percent Growth
Alabama	1,062	2.9%	Montana	233	2.5%
Alaska	163	3.5%	Nebraska	652	3.5%
Arizona	1,440	2.7%	Nevada	767	2.7%
Arkansas	480	2.6%	New Hampshire	224	1.4%
California	19,831	4.5%	New Jersey	1,912	4.2%
Colorado	1,466	2.5%	New Mexico	426	4.2%
Connecticut	887	2.4%	New York	3,314	2.3%
Delaware	539	4.7%	North Carolina	5,837	6.7%
District of Columbia	277	2.2%	North Dakota	311	3.8%
Florida	5,832	4.3%	Ohio	3,837	4.0%
Georgia	1,579	2.8%	Oklahoma	697	3.8%
Hawaii	612	5.8%	Oregon	2,007	3.9%
Idaho	298	2.4%	Pennsylvania	2,689	3.6%
Illinois	4,733	4.2%	Rhode Island	532	4.3%
Indiana	2,741	3.7%	South Carolina	1,570	3.3%
Iowa	860	2.7%	South Dakota	305	2.7%
Kansas	556	2.4%	Tennessee	2,284	3.0%
Kentucky	895	3.3%	Texas	7,997	3.7%
Louisiana	940	4.0%	Utah	987	2.4%
Maine	295	2.6%	Vermont	490	3.2%
Maryland	2,146	3.0%	Virginia	2,236	2.6%
Massachusetts	3,750	4.0%	Washington	2,729	4.0%
Michigan	6,465	6.3%	West Virginia	325	3.8%
Minnesota	1,478	2.8%	Wisconsin	2,392	3.5%
Mississippi	577	3.2%	Wyoming	203	2.6%
Missouri	1,461	2.9%	<b>US TOTAL</b>	<b>106,320</b>	<b>3.7%</b>

## APPENDIX B: CUMULATIVE STATE CLEAN ENERGY JOB LOSSES SINCE PRE-COVID

State	CE Jobs Lost	Percent Decline	State	CE Jobs Lost	Percent Decline
Alabama	7,916	17.4%	Montana	1,654	15.0%
Alaska	1,326	21.6%	Nebraska	2,792	12.7%
Arizona	7,837	12.5%	Nevada	4,243	12.5%
Arkansas	2,726	12.7%	New Hampshire	1,471	8.5%
California	89,881	16.3%	New Jersey	9,877	17.2%
Colorado	6,065	9.0%	New Mexico	2,124	16.9%
Connecticut	5,664	12.8%	New York	17,408	10.6%
Delaware	2,055	14.5%	North Carolina	21,380	18.6%
District of Columbia	2,620	16.9%	North Dakota	1,543	15.5%
Florida	26,643	15.9%	Ohio	16,582	14.3%
Georgia	27,353	31.7%	Oklahoma	4,554	19.2%
Hawaii	3,801	25.3%	Oregon	7,462	12.3%
Idaho	1,566	11.2%	Pennsylvania	18,945	19.5%
Illinois	12,724	9.8%	Rhode Island	3,354	20.5%
Indiana	12,489	14.0%	South Carolina	8,107	14.2%
Iowa	4,448	12.1%	South Dakota	710	5.7%
Kansas	3,028	11.4%	Tennessee	8,351	9.7%
Kentucky	11,228	28.7%	Texas	24,847	10.1%
Louisiana	7,710	24.1%	Utah	3,032	6.8%
Maine	1,899	13.8%	Vermont	2,258	12.4%
Maryland	10,492	12.4%	Virginia	12,103	12.2%
Massachusetts	15,899	14.0%	Washington	18,513	20.8%
Michigan	24,659	18.5%	West Virginia	1,537	14.7%
Minnesota	10,068	15.6%	Wisconsin	8,974	11.4%
Mississippi	3,619	16.3%	Wyoming	883	10.0%
Missouri	7,851	13.3%	<b>US TOTAL</b>	<b>514,270</b>	<b>14.8%</b>

## APPENDIX C: CUMULATIVE COUNTY CLEAN ENERGY JOB LOSSES

<b>State</b>	<b>County</b>	<b>CE Jobs Lost</b>	<b>% Decline</b>
California	Los Angeles County	15,138	15.9%
Washington	King County	6,582	17.5%
California	San Diego County	5,347	10.2%
Texas	Harris County	5,267	9.0%
California	Orange County	5,120	9.0%
Michigan	Oakland County	5,071	16.6%
Illinois	Cook County	5,015	8.9%
Michigan	Wayne County	4,881	24.3%
California	Alameda County	4,550	9.5%
California	Santa Clara County	4,267	8.2%
Georgia	Fulton County	3,962	28.1%
Arizona	Maricopa County	3,959	8.1%
Massachusetts	Middlesex County	3,793	9.9%
California	Riverside County	3,283	13.2%
New York	New York County	3,220	6.8%
Minnesota	Hennepin County	3,104	12.5%
California	San Francisco County	2,842	7.5%
Texas	Dallas County	2,811	7.6%
North Carolina	Mecklenburg County	2,717	13.2%
Massachusetts	Suffolk County	2,690	11.1%
Michigan	Macomb County	2,657	20.8%
California	Kern County	2,406	29.7%
Ohio	Cuyahoga County	2,371	16.8%
Florida	Palm Beach County	2,316	12.9%
California	Fresno County	2,270	26.7%
Kentucky	Jefferson County	2,264	22.8%
California	Sacramento County	2,224	11.7%
North Carolina	Wake County	2,165	12.2%
Florida	Miami-Dade County	2,082	10.9%
Indiana	Marion County	2,079	12.4%
Pennsylvania	Allegheny County	2,037	16.1%
Pennsylvania	Philadelphia County	1,876	19.9%
Florida	Broward County	1,860	12.3%
Missouri	Jackson County	1,858	18.7%
Georgia	Cobb County	1,852	23.8%
Wisconsin	Dane County	1,830	18.6%
Florida	Hillsborough County	1,827	12.3%
Massachusetts	Essex County	1,819	13.0%
Georgia	Gwinnett County	1,816	24.4%
Utah	Utah County	1,801	14.5%

Oregon	Multnomah County	1,782	10.4%
California	San Bernardino County	1,774	12.2%
Rhode Island	Providence County	1,759	18.5%
Hawaii	Honolulu County	1,713	16.1%
Florida	Orange County	1,710	11.7%
Nevada	Clark County	1,696	10.7%
Oregon	Washington County	1,661	12.7%
Wisconsin	Waukesha County	1,615	18.0%
California	Contra Costa County	1,609	10.0%
Michigan	Kent County	1,527	14.8%
Washington	Snohomish County	1,486	18.7%
Virginia	Fairfax County	1,478	7.3%
Connecticut	Hartford County	1,420	10.5%
Wisconsin	Milwaukee County	1,414	11.3%
Florida	Duval County	1,405	13.2%
Maryland	Baltimore County	1,382	10.6%
Massachusetts	Norfolk County	1,379	11.1%
Georgia	DeKalb County	1,357	27.5%
Missouri	St. Louis County	1,340	10.3%
Massachusetts	Worcester County	1,313	13.7%
Ohio	Franklin County	1,276	9.5%
Texas	Tarrant County	1,244	7.6%
Delaware	New Castle County	1,237	12.9%
Connecticut	Fairfield County	1,211	10.5%
Maryland	Prince George's County	1,208	10.6%
Maryland	Montgomery County	1,207	8.3%
Pennsylvania	Montgomery County	1,185	13.0%
Ohio	Hamilton County	1,164	10.1%
Tennessee	Shelby County	1,137	10.3%
Texas	Bexar County	1,130	7.2%
Washington	Pierce County	1,118	15.6%
Pennsylvania	Lehigh County	1,116	14.5%
California	San Joaquin County	1,100	20.6%
New York	Suffolk County	1,098	7.5%
Texas	Travis County	1,070	5.9%
California	Sonoma County	1,066	12.9%
New York	Onondaga County	1,021	26.1%
Florida	Pinellas County	1,013	12.0%
California	Ventura County	1,010	11.5%
Minnesota	Ramsey County	984	16.3%
Minnesota	Dakota County	978	26.7%
Massachusetts	Plymouth County	971	15.1%
Connecticut	New Haven County	964	11.0%

Illinois	DuPage County	946	7.0%
Utah	Salt Lake County	934	5.5%
Kansas	Johnson County	928	11.4%
California	San Mateo County	914	7.0%
Colorado	Denver County	906	6.5%
Oklahoma	Oklahoma County	860	12.9%
New Jersey	Morris County	854	15.7%
North Carolina	Guilford County	852	13.3%
Alabama	Jefferson County	839	11.6%
Massachusetts	Hampden County	816	13.0%
South Carolina	Charleston County	813	13.6%
New York	Nassau County	807	6.6%
Louisiana	East Baton Rouge County	803	13.6%
Massachusetts	Bristol County	802	14.9%
New York	Erie County	785	8.9%
Florida	Lee County	778	12.6%
New York	Queens County	767	6.6%
Iowa	Polk County	746	9.9%
New Jersey	Bergen County	742	11.5%
Indiana	Lake County	732	13.5%
Ohio	Lucas County	731	15.5%
Tennessee	Davidson County	718	6.0%
Illinois	Lake County	713	11.1%
New Jersey	Monmouth County	711	12.7%
Ohio	Montgomery County	706	14.0%
New Jersey	Essex County	705	17.7%
Idaho	Ada County	701	12.5%
Alabama	Madison County	682	10.8%
Colorado	Jefferson County	680	9.7%
California	Stanislaus County	674	17.2%
New Mexico	Bernalillo County	672	10.3%
New Jersey	Middlesex County	669	12.2%
Tennessee	Hamilton County	653	11.8%
Pennsylvania	Lancaster County	652	14.3%
New Hampshire	Hillsborough County	649	12.3%
Louisiana	Jefferson County	646	15.1%
New York	Kings County	640	7.8%
Arizona	Pima County	636	9.1%
New York	Westchester County	636	7.3%
California	Monterey County	626	18.6%
Minnesota	Anoka County	619	17.5%
Washington	Clark County	615	11.6%
South Carolina	Greenville County	609	8.5%



Colorado	Adams County	609	11.3%
Maryland	Anne Arundel County	603	7.5%
Colorado	Arapahoe County	591	7.5%
Washington	Spokane County	588	11.6%
Nebraska	Douglas County	577	9.1%
California	Placer County	551	8.3%
Arkansas	Pulaski County	551	12.5%
Indiana	Allen County	542	10.0%
Pennsylvania	Berks County	539	15.7%
Florida	Polk County	526	14.4%
Texas	Collin County	519	7.1%
Kansas	Sedgwick County	517	11.4%
California	Santa Barbara County	517	11.0%
Oregon	Clackamas County	516	9.9%
Oklahoma	Tulsa County	515	8.3%
Pennsylvania	York County	514	14.0%
Virginia	Loudoun County	506	9.7%
Missouri	St. Charles County	505	15.1%
Ohio	Summit County	491	9.5%
New Jersey	Union County	490	16.0%
Pennsylvania	Bucks County	489	9.4%
Tennessee	Knox County	486	7.9%
Ohio	Stark County	479	16.5%
Nevada	Washoe County	477	7.7%
Pennsylvania	Chester County	476	9.3%
New York	Monroe County	476	8.2%
South Carolina	Richland County	476	12.2%
California	Tulare County	442	16.7%
Ohio	Butler County	439	16.7%
Oregon	Lane County	439	12.4%
New Jersey	Mercer County	435	14.0%
Michigan	Washtenaw County	434	11.3%
Virginia	Prince William County	433	11.2%
Colorado	El Paso County	427	7.7%
Texas	Nueces County	412	12.9%
Pennsylvania	Delaware County	403	12.1%
Illinois	Kane County	399	9.6%
Illinois	Will County	399	8.3%
New Jersey	Burlington County	395	12.4%
Florida	Sarasota County	394	10.8%
Texas	El Paso County	390	8.6%
Florida	Brevard County	370	7.8%
North Carolina	Forsyth County	369	11.2%

New Jersey	Ocean County	368	11.1%
Texas	Montgomery County	366	10.4%
Florida	Volusia County	364	12.7%
Utah	Davis County	360	9.3%
Texas	Hidalgo County	344	14.8%
Alabama	Mobile County	342	8.6%
New Jersey	Camden County	341	11.7%
Michigan	Genesee County	338	11.4%
Florida	Collier County	332	9.7%
New York	Richmond County	322	14.4%
Florida	Seminole County	319	6.7%
New York	Bronx County	310	10.1%
Louisiana	Orleans County	299	11.3%
Florida	Manatee County	293	12.2%
California	Solano County	287	9.5%
South Carolina	Horry County	280	12.9%
Texas	Denton County	278	6.7%
Texas	Brazoria County	274	11.7%
Texas	Williamson County	272	8.8%
New Jersey	Hudson County	269	12.4%
New Jersey	Passaic County	262	13.2%
Colorado	Larimer County	256	6.7%
Texas	Fort Bend County	244	7.9%
New York	Orange County	199	8.9%
Florida	Pasco County	196	9.0%
Florida	Marion County	185	9.4%
Texas	Cameron County	163	13.3%
Florida	Lake County	157	8.7%
Texas	Bell County	144	10.3%
Florida	Osceola County	126	10.8%
Arizona	Pinal County	95	12.7%

## APPENDIX D: CUMULATIVE MSA CLEAN ENERGY JOB LOSSES

<b>MSA</b>	<b>CE Jobs Lost</b>	<b>% Decline</b>
Los Angeles-Long Beach-Santa Ana, CA MSA	42,384	29.0%
New York-Northern New Jersey-Long Island, NY-NJ-PA MSA	29,826	19.4%
Chicago-Naperville-Joliet, IL-IN-WI MSA	25,278	24.6%
San Francisco-Oakland-Fremont, CA MSA	22,302	18.2%
Houston-Sugar Land-Baytown, TX MSA	17,684	27.2%
Washington-Arlington-Alexandria, DC-VA-MD-WV MSA	16,137	18.1%
Detroit-Warren-Livonia, MI MSA	13,726	24.7%
Dallas-Fort Worth-Arlington, TX MSA	13,558	23.2%
Miami-Fort Lauderdale-Pompano Beach, FL MSA	13,546	22.2%
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD MSA	13,478	27.2%
Seattle-Tacoma-Bellevue, WA MSA	13,414	27.7%
Boston-Cambridge-Quincy, MA-NH MSA	13,157	13.7%
Atlanta-Sandy Springs-Marietta, GA MSA	12,737	23.1%
Phoenix-Mesa-Scottsdale, AZ MSA	12,459	26.3%
San Diego-Carlsbad-San Marcos, CA MSA	12,248	21.1%
Riverside-San Bernardino-Ontario, CA MSA	10,126	26.3%
Cleveland-Elyria-Mentor, OH MSA	8,630	38.5%
Sacramento-Arden-Arcade-Roseville, CA MSA	7,881	24.5%
Baltimore-Towson, MD MSA	7,760	20.0%
Minneapolis-St. Paul-Bloomington, MN-WI MSA	7,720	18.4%
Denver-Aurora, CO MSA	7,660	22.0%
Las Vegas-Paradise, NV MSA	7,596	34.5%
Portland-Vancouver-Beaverton, OR-WA MSA	6,473	18.1%
Pittsburgh, PA MSA	5,853	32.3%
St. Louis, MO-IL MSA	5,837	21.6%
San Jose-Sunnyvale-Santa Clara, CA MSA	5,820	17.8%
Tampa-St. Petersburg-Clearwater, FL MSA	5,299	24.0%
Cincinnati-Middletown, OH-KY-IN MSA	5,138	25.2%
Austin-Round Rock, TX MSA	4,965	18.9%
Charlotte-Gastonia-Concord, NC-SC MSA	4,868	19.5%
San Antonio, TX MSA	4,807	22.6%
Kansas City, MO-KS MSA	4,216	20.2%
Indianapolis-Carmel, IN MSA	4,131	16.6%
Columbus, OH MSA	4,069	24.1%
Salt Lake City, UT MSA	3,820	21.1%
Orlando-Kissimmee, FL MSA	3,695	21.9%
Milwaukee-Waukesha-West Allis, WI MSA	3,627	17.7%
Virginia Beach-Norfolk-Newport News, VA-NC MSA	3,544	19.3%
Louisville/Jefferson County, KY-IN MSA	3,492	24.6%
Nashville-Davidson-Murfreesboro-Franklin, TN MSA	3,459	14.3%

Memphis, TN-AR-MS MSA	3,356	22.5%
New Orleans-Metairie-Kenner, LA MSA	3,297	31.1%
Raleigh-Cary, NC MSA	3,007	18.6%
Richmond, VA MSA	3,001	18.3%
Hartford-West Hartford-East Hartford, CT MSA	2,889	19.4%
Reno-Sparks, NV MSA	2,796	28.5%
Jacksonville, FL MSA	2,695	24.2%
Birmingham-Hoover, AL MSA	2,225	16.7%
Buffalo-Niagara Falls, NY MSA	2,214	25.0%
Albuquerque, NM MSA	2,033	28.3%
Rochester, NY MSA	1,908	23.0%
Providence-New Bedford-Fall River, RI-MA MSA	1,683	23.4%
Des Moines-West Des Moines, IA MSA	1,257	19.1%
Oklahoma City, OK MSA	1,154	13.4%
Honolulu, HI MSA	936	9.9%
Flint, MI MSA	823	21.6%

## APPENDIX E: STATE ENERGY EFFICIENCY JOB GROWTH IN JUNE 2020

State	EE Job Growth	Percent Growth	State	EE Job Growth	Percent Growth
Alabama	746	3.0%	Montana	188	2.6%
Alaska	128	3.6%	Nebraska	427	3.7%
Arizona	1,032	2.7%	Nevada	275	2.7%
Arkansas	349	2.7%	New Hampshire	159	1.5%
California	11,381	4.4%	New Jersey	1,219	4.1%
Colorado	814	2.6%	New Mexico	205	4.3%
Connecticut	734	2.4%	New York	2,463	2.2%
Delaware	475	4.6%	North Carolina	4,430	6.6%
District of Columbia	230	2.2%	North Dakota	177	3.9%
Florida	4,292	4.3%	Ohio	2,702	4.0%
Georgia	1,139	2.7%	Oklahoma	431	3.7%
Hawaii	277	6.8%	Oregon	1,492	4.2%
Idaho	197	2.5%	Pennsylvania	2,044	3.7%
Illinois	3,318	4.2%	Rhode Island	428	4.3%
Indiana	1,688	3.7%	South Carolina	835	3.3%
Iowa	519	2.9%	South Dakota	190	2.7%
Kansas	375	2.4%	Tennessee	1,555	3.3%
Kentucky	596	3.3%	Texas	5,402	3.7%
Louisiana	668	3.9%	Utah	725	2.5%
Maine	198	2.7%	Vermont	293	3.2%
Maryland	1,779	2.9%	Virginia	1,784	2.6%
Massachusetts	2,344	4.0%	Washington	2,047	4.2%
Michigan	4,161	6.4%	West Virginia	220	3.8%
Minnesota	1,087	2.8%	Wisconsin	1,938	3.6%
Mississippi	412	3.3%	Wyoming	173	2.6%
Missouri	1,046	2.9%	<b>US TOTAL</b>	<b>71,786</b>	<b>3.7%</b>

## APPENDIX F: CUMULATIVE STATE ENERGY EFFICIENCY JOB LOSSES SINCE PRE-COVID

State	EE Jobs Lost	Percent Decline	State	EE Jobs Lost	Percent Decline
Alabama	5,722	18.1%	Montana	1,377	15.6%
Alaska	1,049	22.3%	Nebraska	1,886	13.5%
Arizona	5,757	12.9%	Nevada	1,616	13.5%
Arkansas	2,057	13.3%	New Hampshire	1,062	8.9%
California	53,988	16.7%	New Jersey	6,680	17.6%
Colorado	3,410	9.4%	New Mexico	1,104	18.1%
Connecticut	4,766	13.2%	New York	13,586	10.7%
Delaware	1,831	14.6%	North Carolina	16,634	18.9%
District of Columbia	2,199	16.9%	North Dakota	903	16.2%
Florida	19,944	16.1%	Ohio	12,214	14.7%
Georgia	20,201	32.1%	Oklahoma	2,963	19.7%
Hawaii	1,709	28.1%	Oregon	5,591	13.0%
Idaho	1,070	11.8%	Pennsylvania	14,655	20.5%
Illinois	9,078	10.0%	Rhode Island	2,724	20.9%
Indiana	8,164	14.7%	South Carolina	4,467	14.5%
Iowa	2,770	13.1%	South Dakota	459	6.0%
Kansas	2,107	11.8%	Tennessee	5,771	10.7%
Kentucky	7,804	29.8%	Texas	17,679	10.4%
Louisiana	5,660	24.3%	Utah	2,296	7.1%
Maine	1,316	14.8%	Vermont	1,435	13.0%
Maryland	8,829	12.4%	Virginia	9,869	12.3%
Massachusetts	10,224	14.4%	Washington	14,079	21.7%
Michigan	16,146	18.9%	West Virginia	1,072	15.0%
Minnesota	7,509	15.9%	Wisconsin	7,321	11.5%
Mississippi	2,642	16.9%	Wyoming	771	10.2%
Missouri	5,808	13.7%	<b>US TOTAL</b>	<b>359,976</b>	<b>15.2%</b>

## APPENDIX G: MONTHLY CLEAN ENERGY JOB LOSSES BY STATE

(Negative values denote job growth)

State	March	April	May	June	Total	State	March	April	May	June	Total
Alabama	1,383	7,261	334	-1,062	7,916	Montana	622	1,213	51	-233	1,653
Alaska	328	1,073	88	-163	1,326	Nebraska	806	2,495	143	-652	2,792
Arizona	1,484	7,433	359	-1,440	7,836	Nevada	1,176	3,686	149	-767	4,244
Arkansas	555	2,533	119	-480	2,727	New Hampshire	498	1,134	63	-224	1,471
California	27,583	77,815	4,313	-19,831	89,880	New Jersey	3,252	8,115	422	-1,912	9,877
Colorado	1,326	5,952	252	-1,466	6,064	New Mexico	711	1,759	80	-426	2,124
Connecticut	1,037	5,191	323	-887	5,664	New York	6,006	13,868	848	-3,314	17,408
Delaware	729	1,766	99	-539	2,055	North Carolina	9,124	17,138	955	-5,837	21,380
District of Columbia	935	1,843	119	-277	2,620	North Dakota	335	1,399	120	-311	1,543
Florida	3,963	25,949	2,563	-5,832	26,643	Ohio	6,929	12,879	612	-3,837	16,583
Georgia	1,909	25,282	1,741	-1,579	27,353	Oklahoma	718	4,143	390	-697	4,554
Hawaii	908	3,351	154	-612	3,801	Oregon	1,747	7,206	516	-2,007	7,462
Idaho	580	1,229	54	-298	1,565	Pennsylvania	8,283	12,780	571	-2,689	18,945
Illinois	4,524	12,007	926	-4,733	12,724	Rhode Island	1,351	2,460	75	-532	3,354
Indiana	3,766	10,954	511	-2,741	12,490	South Carolina	1,427	7,869	382	-1,570	8,108
Iowa	1,388	3,758	162	-860	4,448	South Dakota	165	784	65	-305	709
Kansas	1,023	2,436	125	-556	3,028	Tennessee	2,297	7,878	460	-2,284	8,351
Kentucky	2,180	9,383	559	-895	11,227	Texas	5,965	25,170	1,709	-7,997	24,847
Louisiana	2,135	6,220	294	-940	7,709	Utah	1,073	2,826	120	-987	3,032
Maine	682	1,382	130	-295	1,899	Vermont	651	2,029	68	-490	2,258
Maryland	2,857	9,055	726	-2,146	10,492	Virginia	2,828	10,845	666	-2,236	12,103
Massachusetts	6,726	12,147	776	-3,750	15,899	Washington	5,646	14,433	1,163	-2,729	18,513
Michigan	7,867	22,245	1,012	-6,465	24,659	West Virginia	205	1,610	48	-325	1,538
Minnesota	3,536	7,628	382	-1,478	10,068	Wisconsin	3,020	7,814	532	-2,392	8,974
Mississippi	511	3,379	306	-577	3,619	Wyoming	281	747	58	-203	883
Missouri	2,108	6,864	340	-1,461	7,851	<b>US TOTAL</b>	<b>147,139</b>	<b>446,416</b>	<b>27,035</b>	<b>-106,320</b>	<b>514,270</b>

## APPENDIX H: MONTHLY CLEAN ENERGY JOB LOSSES BY MAJOR TECHNOLOGY

(Negative values denote job growth)

State	March	April	May	June	Total
<b>Renewable Electric Power Generation</b>	23,739	71,705	4,272	-17,287	82,429
<b>Clean Transmission, Distribution, &amp; Storage</b>	6,517	19,666	1,166	-4,561	22,788
<b>Energy Efficiency</b>	103,298	309,584	18,880	-71,786	359,976
<b>Clean Fuels</b>	2,186	10,390	657	-2,351	10,882
<b>Clean Vehicles</b>	11,399	35,070	2,059	-10,335	38,193
<b>Total</b>	<b>147,139</b>	<b>446,416</b>	<b>27,035</b>	<b>-106,320</b>	<b>514,270</b>