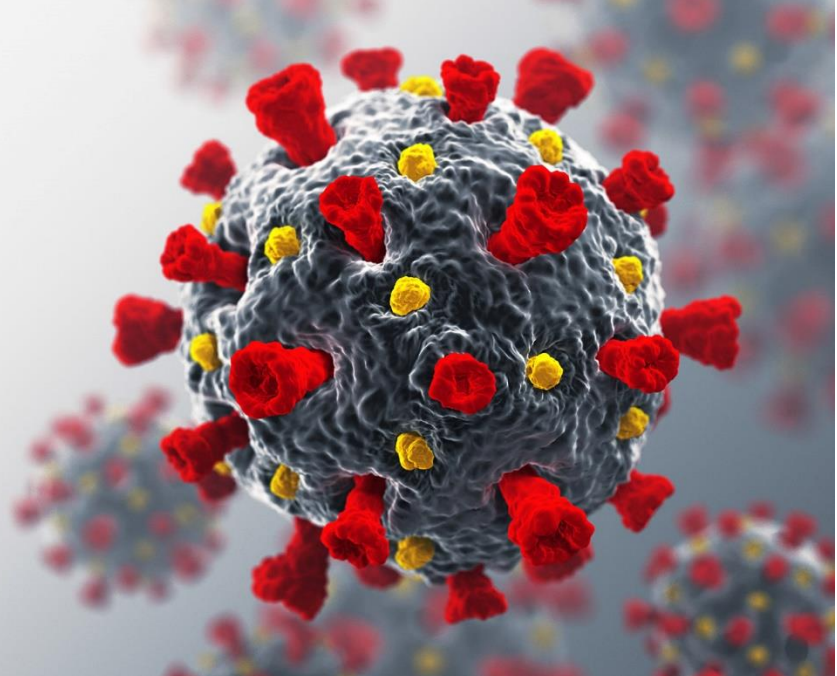


To: E2, E4TheFuture, and ACORE  
From: Philip Jordan  
Vice-President, BW Research Partnership  
Date: November 12, 2020

## MEMORANDUM

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



## INTRODUCTION

BW Research finds that the U.S. clean energy sector added 23,800 jobs in October, leaving 454,000 clean energy workers out of work since February of this year – a 13 percent decline over pre-COVID-19 employment levels. While the nation’s overall jobs recovery has stalled over the last several months, the clean energy sector has been particularly slow to rebound. Concerns raised in memoranda from prior months continue, including record-breaking levels of new and continuing unemployment claims and the exhaustion of many programs from earlier stimulus.

The November 6th jobs report, which showed that the U.S. economy created 638,000 new jobs over the previous month, covers the first two weeks of October. While these new jobs primarily fall in industries unrelated to clean energy (leisure and hospitality and retail trade), job gains are also seen in clean energy adjacent industries, such as construction and professional and business services. While the recent jobs report shows some positive trends for the economy, alarming trends remain.

Driven by job losses at the federal level, public sector employment dropped significantly in this month’s jobs report, continuing last month’s dramatic decline. Public sector unemployment continued its decline likely due to Census work concluding, state economies straining under falling revenues, and increased COVID-related expenses. Weekly unemployment claims continue at an historic high pace. The November 5th weekly claims data showed a slight decline in initial jobless claims, but is still at a level higher than any week in the data’s recorded history prior to March, when new programs such as the Pandemic Unemployment Assistance Program are included.<sup>1</sup> At the same time, the long-term unemployment rate – defined as 27 weeks of consecutive unemployment – has risen sharply since March to 3.6 million, representing about one third of the 11.1 million currently unemployed overall. Also alarming is the rise in permanent unemployment over the same period, which was a tiny fraction of the initial job losses in the spring but now represents 3.7 million job losses, one third of the total unemployed.<sup>2</sup> Further, the “official” unemployment claims do not include people not currently looking for work, including, notably, parents who must remain home due to remote schooling of their children.

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<sup>1</sup> Weekly unemployment claims data collection began in January 1967, <https://oui.doleta.gov/unemploy/claims.asp>.

<sup>2</sup> BLS Employment Situation Summary, Nov 6. <https://www.bls.gov/news.release/empsit.nr0.htm>.

This report shows no state or clean energy sector as a significant job loser or gainer. However, impacts of this pandemic are not being felt evenly throughout worker demographics. Black and Hispanic workers continue to suffer from disproportionately high levels of unemployment.<sup>3</sup>

## 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 October unemployment data show job growth was no more than one percent for each of the clean energy sectors:

- Energy efficiency, the largest clean energy sector, experienced a nearly 1 percent gain in employment, with the addition of approximately 16,800 jobs. The energy efficiency sector continues to suffer from 319,900 job losses impacting almost 14 percent of its workforce. For more information on state level energy efficiency impacts, see Appendix E: State Energy Efficiency Job Growth in October 2020.
- Renewable electric power generation saw a less than 1 percent rise in employment, with about 4,000 jobs regained in October. A total of 71,700 renewable electric power generation workers (12 percent of the sector's workforce) remain unemployed due to the pandemic.
- Clean fuels and clean transmission, distribution, and storage saw similarly small rebounds in October, gaining 400 and 1,000 jobs, respectively. The complete impact of the pandemic on clean fuels and clean transmission, distribution, and storage totals 9,600 and 20,300 lost jobs from their respective, pre-pandemic employment levels. Clean fuels jobs have dropped 9 percent since March, while clean transmission, distribution, and storage jobs have dropped 14 percent thus far.
- Clean vehicles added back a little more than half a percent of its workforce, or about 1,600 jobs in October. The clean vehicles sector continues to experience a nearly 13 percent decline in jobs over its pre-COVID-19 employment levels. This translates to 32,500 ongoing job losses.

California had the largest monthly increase, with 5,200 jobs returning in October or more than 1 percent of its clean energy workforce. Hawaii saw the highest percentage of clean energy workforce growth at 1.5 percent for a total gain of nearly 200 jobs. Texas, New York, North Carolina, Florida, and Illinois also gained more than 1,000 clean energy jobs each in October. Alaska, South Dakota, New Hampshire, Wyoming, and Montana saw the smallest growth, all with less than 60 jobs gained over the past month. For growth by state, see Appendix A: State Clean Energy Job Growth in October 2020.

This low level of job growth is especially concerning given the dramatic decline in clean energy jobs since the onset of COVID-19. Over 40 states continue to suffer double digit job losses in clean energy with five states facing 20 percent or greater unemployment and one state, Georgia, facing more than 30 percent unemployment in the sector.

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<sup>3</sup> BLS Employment Situation Summary, Nov 6. <https://www.bls.gov/news.release/empsit.nr0.htm>.

Counties that have lost more than 4,500 clean energy jobs since the beginning of March include Los Angeles County, CA; King County, WA; Oakland County, MI; San Diego County, CA; and Wayne County, MI. The counties that suffered hardest as a percent of their workforce are Fulton County, GA; DeKalb County, GA; and Kern 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; and New Orleans-Metairie-Kenner, LA MSA. For losses by MSA, see Appendix D: Cumulative MSA Clean Energy Job Losses.

## METHODOLOGY

BLS employment reports for September and October, 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>

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

State	CE Job Growth	Percent Growth	State	CE Job Growth	Percent Growth
Alabama	223	0.6%	Montana	56	0.6%
Alaska	37	0.8%	Nebraska	131	0.7%
Arizona	460	0.8%	Nevada	136	0.5%
Arkansas	124	0.7%	New Hampshire	54	0.3%
California	5,188	1.1%	New Jersey	275	0.6%
Colorado	464	0.7%	New Mexico	73	0.7%
Connecticut	300	0.8%	New York	1,536	1.0%
Delaware	111	0.9%	North Carolina	1,193	1.3%
District of Columbia	138	1.1%	North Dakota	72	0.8%
Florida	1,167	0.8%	Ohio	744	0.7%
Georgia	358	0.6%	Oklahoma	101	0.5%
Hawaii	174	1.5%	Oregon	404	0.8%
Idaho	83	0.7%	Pennsylvania	542	0.7%
Illinois	1,140	1.0%	Rhode Island	136	1.0%
Indiana	403	0.5%	South Carolina	182	0.4%
Iowa	126	0.4%	South Dakota	44	0.4%
Kansas	149	0.6%	Tennessee	397	0.5%
Kentucky	117	0.4%	Texas	1,904	0.9%
Louisiana	212	0.9%	Utah	228	0.5%
Maine	76	0.6%	Vermont	62	0.4%
Maryland	619	0.8%	Virginia	615	0.7%
Massachusetts	921	0.9%	Washington	569	0.8%
Michigan	670	0.6%	West Virginia	74	0.8%
Minnesota	329	0.6%	Wisconsin	310	0.4%
Mississippi	120	0.6%	Wyoming	55	0.7%
Missouri	235	0.5%	<b>US TOTAL</b>	<b>23,838</b>	<b>0.8%</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	7,395	16.3%	Montana	1,524	13.8%
Alaska	1,234	20.1%	Nebraska	2,514	11.4%
Arizona	6,844	10.9%	Nevada	3,913	11.5%
Arkansas	2,424	11.3%	New Hampshire	1,319	7.6%
California	76,638	13.9%	New Jersey	9,109	15.9%
Colorado	4,760	7.1%	New Mexico	1,860	14.8%
Connecticut	4,889	11.1%	New York	13,329	8.1%
Delaware	1,806	12.8%	North Carolina	18,340	16.0%
District of Columbia	2,297	14.8%	North Dakota	1,358	13.6%
Florida	24,000	14.3%	Ohio	14,774	12.7%
Georgia	26,540	30.7%	Oklahoma	4,308	18.2%
Hawaii	3,477	23.2%	Oregon	6,466	10.7%
Idaho	1,403	10.0%	Pennsylvania	17,340	17.8%
Illinois	9,770	7.5%	Rhode Island	3,029	18.5%
Indiana	11,414	12.8%	South Carolina	7,551	13.2%
Iowa	4,114	11.2%	South Dakota	596	4.8%
Kansas	2,613	9.9%	Tennessee	7,186	8.4%
Kentucky	10,913	27.9%	Texas	20,765	8.4%
Louisiana	7,253	22.7%	Utah	2,590	5.8%
Maine	1,706	12.4%	Vermont	2,040	11.2%
Maryland	9,212	10.8%	Virginia	10,600	10.7%
Massachusetts	12,968	11.4%	Washington	17,124	19.2%
Michigan	22,671	17.0%	West Virginia	1,377	13.1%
Minnesota	9,248	14.3%	Wisconsin	8,140	10.3%
Mississippi	3,320	14.9%	Wyoming	770	8.7%
Missouri	7,194	12.2%	<b>US TOTAL</b>	<b>454,024</b>	<b>13.1%</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	12,881	13.5%
Washington	King County	6,056	16.1%
Michigan	Oakland County	4,620	15.1%
California	San Diego County	4,494	8.6%
Michigan	Wayne County	4,489	22.3%
California	Orange County	4,292	7.5%
Texas	Harris County	4,287	7.3%
Illinois	Cook County	3,819	6.8%
California	Alameda County	3,818	7.9%
Georgia	Fulton County	3,816	27.1%
California	Santa Clara County	3,571	6.9%
Arizona	Maricopa County	3,402	6.9%
Massachusetts	Middlesex County	3,179	8.3%
Minnesota	Hennepin County	2,815	11.3%
California	Riverside County	2,777	11.2%
New York	New York County	2,558	5.4%
Michigan	Macomb County	2,434	19.1%
California	San Francisco County	2,375	6.2%
North Carolina	Mecklenburg County	2,348	11.4%
Texas	Dallas County	2,279	6.2%
Massachusetts	Suffolk County	2,260	9.3%
Kentucky	Jefferson County	2,184	22.0%
California	Kern County	2,108	26.0%
Ohio	Cuyahoga County	2,078	14.7%
Florida	Palm Beach County	2,025	11.3%
California	Fresno County	1,977	23.3%
California	Sacramento County	1,876	9.9%
North Carolina	Wake County	1,867	10.5%
Indiana	Marion County	1,865	11.1%
Pennsylvania	Allegheny County	1,835	14.5%
Florida	Miami-Dade County	1,814	9.5%
Georgia	Cobb County	1,780	22.9%
Georgia	Gwinnett County	1,745	23.5%
Pennsylvania	Philadelphia County	1,698	18.0%
Rhode Island	Providence County	1,686	17.7%
Missouri	Jackson County	1,625	16.4%
Florida	Broward County	1,624	10.8%
Florida	Hillsborough County	1,596	10.8%
Nevada	Clark County	1,540	9.7%
Hawaii	Honolulu County	1,535	14.4%

Massachusetts	Essex County	1,535	10.9%
Oregon	Multnomah County	1,520	8.9%
Wisconsin	Dane County	1,512	15.3%
Utah	Utah County	1,508	12.2%
California	San Bernardino County	1,497	10.3%
Wisconsin	Waukesha County	1,492	16.7%
Florida	Orange County	1,492	10.2%
Oregon	Washington County	1,473	11.3%
Michigan	Kent County	1,421	13.8%
Washington	Snohomish County	1,369	17.3%
California	Contra Costa County	1,352	8.4%
Georgia	DeKalb County	1,307	26.5%
Virginia	Fairfax County	1,291	6.4%
Wisconsin	Milwaukee County	1,257	10.1%
Florida	Duval County	1,229	11.6%
Connecticut	Hartford County	1,225	9.0%
Missouri	St. Louis County	1,209	9.2%
Maryland	Baltimore County	1,184	9.1%
Massachusetts	Norfolk County	1,159	9.3%
Massachusetts	Worcester County	1,110	11.6%
Ohio	Franklin County	1,105	8.2%
Delaware	New Castle County	1,084	11.3%
Pennsylvania	Montgomery County	1,064	11.7%
Connecticut	Fairfield County	1,045	9.0%
Maryland	Prince George's County	1,036	9.1%
Maryland	Montgomery County	1,031	7.1%
Washington	Pierce County	1,027	14.3%
Ohio	Hamilton County	1,009	8.8%
Texas	Tarrant County	1,009	6.2%
Pennsylvania	Lehigh County	988	12.9%
California	Sonoma County	959	11.6%
Tennessee	Shelby County	957	8.7%
California	San Joaquin County	945	17.7%
Texas	Bexar County	915	5.9%
Massachusetts	Plymouth County	915	14.2%
Minnesota	Ramsey County	890	14.8%
Florida	Pinellas County	884	10.5%
New York	Suffolk County	874	5.9%
New York	Onondaga County	865	22.1%
Texas	Travis County	863	4.7%
California	Ventura County	851	9.7%
Kansas	Johnson County	845	10.4%
Minnesota	Dakota County	834	22.8%

Connecticut	New Haven County	833	9.5%
Oklahoma	Oklahoma County	801	12.0%
North Carolina	Guilford County	779	12.2%
Utah	Salt Lake County	774	4.6%
New Jersey	Morris County	767	14.1%
Colorado	Denver County	765	5.5%
California	San Mateo County	763	5.8%
Massachusetts	Hampden County	761	12.2%
Alabama	Jefferson County	756	10.4%
South Carolina	Charleston County	743	12.4%
Massachusetts	Bristol County	738	13.7%
Illinois	DuPage County	715	5.3%
Florida	Lee County	680	11.0%
Indiana	Lake County	677	12.5%
Louisiana	East Baton Rouge County	676	11.5%
New Jersey	Bergen County	672	10.4%
Ohio	Lucas County	664	14.0%
New Jersey	Essex County	643	16.2%
New York	Nassau County	640	5.2%
Illinois	Lake County	639	9.9%
Iowa	Polk County	633	8.4%
Idaho	Ada County	632	11.2%
New York	Erie County	627	7.1%
New Jersey	Monmouth County	619	11.1%
California	Stanislaus County	616	15.7%
New York	Queens County	609	5.2%
New Jersey	Middlesex County	607	11.1%
Tennessee	Hamilton County	602	10.9%
Alabama	Madison County	602	9.5%
Louisiana	Jefferson County	595	13.9%
Pennsylvania	Lancaster County	592	13.0%
Ohio	Montgomery County	588	11.7%
Colorado	Jefferson County	578	8.2%
Washington	Clark County	566	10.7%
Minnesota	Anoka County	560	15.9%
California	Monterey County	559	16.6%
Colorado	Adams County	550	10.2%
Arizona	Pima County	548	7.9%
New Hampshire	Hillsborough County	535	10.2%
Washington	Spokane County	530	10.5%
Colorado	Arapahoe County	529	6.7%
Tennessee	Davidson County	526	4.4%
New Mexico	Bernalillo County	522	8.0%



New York	Kings County	510	6.2%
New York	Westchester County	506	5.8%
South Carolina	Greenville County	503	7.0%
Maryland	Anne Arundel County	502	6.2%
Nebraska	Douglas County	498	7.9%
Pennsylvania	Berks County	496	14.5%
California	Placer County	491	7.4%
Arkansas	Pulaski County	485	11.0%
California	Santa Barbara County	466	9.9%
Pennsylvania	York County	465	12.7%
Indiana	Allen County	465	8.6%
Florida	Polk County	461	12.6%
Ohio	Summit County	453	8.7%
Missouri	St. Charles County	448	13.4%
Pennsylvania	Bucks County	448	8.6%
Tennessee	Knox County	439	7.1%
Ohio	Stark County	435	14.9%
Oregon	Clackamas County	433	8.3%
Oklahoma	Tulsa County	426	6.9%
Virginia	Loudoun County	424	8.1%
Kansas	Sedgwick County	423	9.3%
Texas	Collin County	420	5.7%
California	Tulare County	414	15.6%
South Carolina	Richland County	408	10.5%
Ohio	Butler County	406	15.4%
Oregon	Lane County	392	11.1%
Pennsylvania	Chester County	391	7.7%
New Jersey	Union County	388	12.7%
Virginia	Prince William County	382	9.9%
New York	Monroe County	379	6.5%
New Jersey	Mercer County	377	12.1%
Nevada	Washoe County	371	6.0%
Michigan	Washtenaw County	368	9.6%
Pennsylvania	Delaware County	366	11.0%
Colorado	El Paso County	362	6.6%
Texas	Nueces County	362	11.4%
Florida	Sarasota County	350	9.6%
Illinois	Will County	347	7.2%
New Jersey	Burlington County	344	10.8%
Illinois	Kane County	333	8.0%
Texas	Montgomery County	326	9.3%
Florida	Volusia County	324	11.3%
North Carolina	Forsyth County	318	9.6%

Texas	El Paso County	317	7.0%
New Jersey	Ocean County	317	9.6%
Florida	Brevard County	317	6.7%
Michigan	Genesee County	311	10.4%
Alabama	Mobile County	308	7.8%
New Jersey	Camden County	296	10.1%
Utah	Davis County	291	7.5%
New York	Richmond County	285	12.8%
Florida	Collier County	285	8.4%
Texas	Hidalgo County	285	12.3%
Louisiana	Orleans County	275	10.4%
Florida	Seminole County	275	5.8%
Florida	Manatee County	266	11.1%
South Carolina	Horry County	250	11.5%
New York	Bronx County	249	8.1%
New Jersey	Passaic County	234	11.8%
New Jersey	Hudson County	233	10.8%
California	Solano County	233	7.7%
Texas	Brazoria County	230	9.8%
Texas	Williamson County	225	7.2%
Texas	Denton County	225	5.4%
Colorado	Larimer County	212	5.5%
Texas	Fort Bend County	198	6.4%
New York	Orange County	168	7.5%
Florida	Marion County	164	8.3%
Florida	Pasco County	160	7.3%
Texas	Cameron County	149	12.2%
Florida	Lake County	129	7.1%
Texas	Bell County	129	9.2%
Florida	Osceola County	99	8.5%
Arizona	Pinal County	72	9.7%

## 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	39,524	27.0%
New York-Northern New Jersey-Long Island, NY-NJ-PA MSA	27,233	17.7%
Chicago-Naperville-Joliet, IL-IN-WI MSA	23,661	23.0%
San Francisco-Oakland-Fremont, CA MSA	20,517	16.7%
Houston-Sugar Land-Baytown, TX MSA	16,823	25.9%
Washington-Arlington-Alexandria, DC-VA-MD-WV MSA	15,174	17.1%
Seattle-Tacoma-Bellevue, WA MSA	12,919	26.7%
Dallas-Fort Worth-Arlington, TX MSA	12,906	22.0%
Detroit-Warren-Livonia, MI MSA	12,863	23.2%
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD MSA	12,767	25.8%
Miami-Fort Lauderdale-Pompano Beach, FL MSA	12,523	20.5%
Atlanta-Sandy Springs-Marietta, GA MSA	12,142	22.0%
Phoenix-Mesa-Scottsdale, AZ MSA	11,989	25.3%
Boston-Cambridge-Quincy, MA-NH MSA	11,643	12.1%
San Diego-Carlsbad-San Marcos, CA MSA	11,374	19.6%
Riverside-San Bernardino-Ontario, CA MSA	9,529	24.8%
Cleveland-Elyria-Mentor, OH MSA	8,344	37.2%
Sacramento-Arden-Arcade-Roseville, CA MSA	7,438	23.1%
Denver-Aurora, CO MSA	7,394	21.2%
Baltimore-Towson, MD MSA	7,326	18.9%
Minneapolis-St. Paul-Bloomington, MN-WI MSA	7,261	17.3%
Las Vegas-Paradise, NV MSA	7,159	32.5%
Portland-Vancouver-Beaverton, OR-WA MSA	6,008	16.8%
Pittsburgh, PA MSA	5,623	31.0%
St. Louis, MO-IL MSA	5,557	20.5%
San Jose-Sunnyvale-Santa Clara, CA MSA	5,421	16.6%
Tampa-St. Petersburg-Clearwater, FL MSA	5,050	22.9%
Cincinnati-Middletown, OH-KY-IN MSA	4,914	24.1%
Austin-Round Rock, TX MSA	4,695	17.9%
Charlotte-Gastonia-Concord, NC-SC MSA	4,610	18.4%
San Antonio, TX MSA	4,558	21.4%
Kansas City, MO-KS MSA	4,039	19.4%
Columbus, OH MSA	3,866	22.9%
Indianapolis-Carmel, IN MSA	3,849	15.5%
Salt Lake City, UT MSA	3,675	20.3%
Milwaukee-Waukesha-West Allis, WI MSA	3,391	16.5%
Orlando-Kissimmee, FL MSA	3,378	20.0%
Louisville/Jefferson County, KY-IN MSA	3,368	23.7%
Virginia Beach-Norfolk-Newport News, VA-NC MSA	3,337	18.1%
Nashville-Davidson-Murfreesboro-Franklin, TN MSA	3,176	13.1%

New Orleans-Metairie-Kenner, LA MSA	3,140	29.7%
Memphis, TN-AR-MS MSA	3,132	21.0%
Raleigh-Cary, NC MSA	2,864	17.8%
Richmond, VA MSA	2,823	17.2%
Hartford-West Hartford-East Hartford, CT MSA	2,725	18.3%
Reno-Sparks, NV MSA	2,697	27.5%
Jacksonville, FL MSA	2,589	23.3%
Buffalo-Niagara Falls, NY MSA	2,115	23.9%
Birmingham-Hoover, AL MSA	2,087	15.7%
Albuquerque, NM MSA	1,937	27.0%
Rochester, NY MSA	1,821	21.9%
Providence-New Bedford-Fall River, RI-MA MSA	1,584	22.0%
Des Moines-West Des Moines, IA MSA	1,199	18.2%
Oklahoma City, OK MSA	1,067	12.4%
Flint, MI MSA	761	20.0%
Honolulu, HI MSA	753	7.9%

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

State	EE Job Growth	Percent Growth	State	EE Job Growth	Percent Growth
Alabama	163	0.6%	Montana	47	0.6%
Alaska	29	0.8%	Nebraska	91	0.7%
Arizona	337	0.9%	Nevada	54	0.5%
Arkansas	95	0.7%	New Hampshire	39	0.4%
California	3,162	1.2%	New Jersey	188	0.6%
Colorado	257	0.8%	New Mexico	39	0.8%
Connecticut	254	0.8%	New York	1,213	1.1%
Delaware	98	0.9%	North Carolina	934	1.3%
District of Columbia	114	1.0%	North Dakota	44	0.9%
Florida	862	0.8%	Ohio	557	0.8%
Georgia	266	0.6%	Oklahoma	68	0.6%
Hawaii	79	1.8%	Oregon	308	0.8%
Idaho	56	0.7%	Pennsylvania	433	0.8%
Illinois	801	1.0%	Rhode Island	110	1.0%
Indiana	275	0.6%	South Carolina	101	0.4%
Iowa	82	0.4%	South Dakota	29	0.4%
Kansas	105	0.7%	Tennessee	286	0.6%
Kentucky	84	0.5%	Texas	1,375	0.9%
Louisiana	157	0.9%	Utah	174	0.6%
Maine	53	0.7%	Vermont	41	0.4%
Maryland	515	0.8%	Virginia	499	0.7%
Massachusetts	592	1.0%	Washington	437	0.8%
Michigan	440	0.6%	West Virginia	52	0.9%
Minnesota	247	0.6%	Wisconsin	250	0.4%
Mississippi	89	0.7%	Wyoming	48	0.7%
Missouri	177	0.5%	<b>US TOTAL</b>	<b>16,806</b>	<b>0.8%</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	5,370	17.0%	Montana	1,275	14.4%
Alaska	981	20.9%	Nebraska	1,701	12.2%
Arizona	5,065	11.3%	Nevada	1,498	12.5%
Arkansas	1,843	11.9%	New Hampshire	962	8.1%
California	46,336	14.3%	New Jersey	6,202	16.3%
Colorado	2,736	7.6%	New Mexico	979	16.1%
Connecticut	4,145	11.5%	New York	10,476	8.3%
Delaware	1,617	12.9%	North Carolina	14,311	16.3%
District of Columbia	1,939	14.9%	North Dakota	797	14.3%
Florida	18,110	14.7%	Ohio	10,948	13.2%
Georgia	19,630	31.2%	Oklahoma	2,810	18.7%
Hawaii	1,567	25.8%	Oregon	4,881	11.4%
Idaho	968	10.7%	Pennsylvania	13,473	18.9%
Illinois	7,099	7.8%	Rhode Island	2,473	19.0%
Indiana	7,496	13.5%	South Carolina	4,184	13.6%
Iowa	2,567	12.1%	South Dakota	389	5.1%
Kansas	1,828	10.2%	Tennessee	5,028	9.3%
Kentucky	7,595	29.0%	Texas	14,883	8.8%
Louisiana	5,335	22.9%	Utah	1,971	6.1%
Maine	1,196	13.5%	Vermont	1,299	11.8%
Maryland	7,801	10.9%	Virginia	8,697	10.8%
Massachusetts	8,435	11.8%	Washington	13,079	20.1%
Michigan	14,893	17.5%	West Virginia	967	13.5%
Minnesota	6,913	14.7%	Wisconsin	6,670	10.5%
Mississippi	2,436	15.5%	Wyoming	675	8.9%
Missouri	5,337	12.5%	<b>US TOTAL</b>	<b>319,864</b>	<b>13.5%</b>

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

(Negative values denote job growth)

State	March	April	May	June	July	August	September	October	Total
Alabama	1,383	7,261	334	-1,062	-80	-110	-108	-223	7,395
Alaska	328	1,073	88	-163	-17	-22	-17	-37	1,234
Arizona	1,484	7,433	359	-1,440	-159	-184	-191	-460	6,844
Arkansas	555	2,533	119	-480	-52	-72	-54	-124	2,424
California	27,583	77,815	4,313	-19,831	-2,346	-3,097	-2,612	-5,188	76,638
Colorado	1,326	5,952	252	-1,466	-333	-305	-202	-464	4,760
Connecticut	1,037	5,191	323	-887	-131	-197	-148	-300	4,889
Delaware	729	1,766	99	-539	-43	-45	-50	-111	1,806
District of Columbia	935	1,843	119	-277	-57	-74	-54	-138	2,297
Florida	3,963	25,949	2,563	-5,832	-397	-596	-483	-1,167	24,000
Georgia	1,909	25,282	1,741	-1,579	-121	-174	-159	-358	26,540
Hawaii	908	3,351	154	-612	-55	-32	-64	-174	3,477
Idaho	580	1,229	54	-298	-26	-29	-24	-83	1,403
Illinois	4,524	12,007	926	-4,733	-565	-604	-645	-1,140	9,770
Indiana	3,766	10,954	511	-2,741	-217	-200	-256	-403	11,414
Iowa	1,388	3,758	162	-860	-57	-58	-91	-126	4,114
Kansas	1,023	2,436	125	-556	-82	-104	-80	-149	2,613
Kentucky	2,180	9,383	559	-895	-30	-53	-114	-117	10,913
Louisiana	2,135	6,220	294	-940	-67	-90	-88	-212	7,253
Maine	682	1,382	130	-295	-26	-52	-38	-76	1,706
Maryland	2,857	9,055	726	-2,146	-188	-233	-240	-619	9,212
Massachusetts	6,726	12,147	776	-3,750	-620	-848	-541	-921	12,968
Michigan	7,867	22,245	1,012	-6,465	-437	-351	-530	-670	22,671
Minnesota	3,536	7,628	382	-1,478	-135	-162	-194	-329	9,248
Mississippi	511	3,379	306	-577	-42	-63	-74	-120	3,320
Missouri	2,108	6,864	340	-1,461	-111	-134	-177	-235	7,194
Montana	622	1,213	51	-233	-23	-27	-24	-56	1,524
Nebraska	806	2,495	143	-652	-38	-53	-58	-131	2,514
Nevada	1,176	3,686	149	-767	-51	-73	-71	-136	3,913
New Hampshire	498	1,134	63	-224	-34	-33	-31	-54	1,319
New Jersey	3,252	8,115	422	-1,912	-160	-183	-150	-275	9,109
New Mexico	711	1,759	80	-426	-62	-72	-56	-73	1,860
New York	6,006	13,868	848	-3,314	-549	-1,185	-809	-1,536	13,329
North Carolina	9,124	17,138	955	-5,837	-539	-683	-624	-1,193	18,340
North Dakota	335	1,399	120	-311	-26	-40	-47	-72	1,358
Ohio	6,929	12,879	612	-3,837	-286	-331	-447	-744	14,774
Oklahoma	718	4,143	390	-697	-36	-56	-53	-101	4,308
Oregon	1,747	7,206	516	-2,007	-183	-205	-203	-404	6,466
Pennsylvania	8,283	12,780	571	-2,689	-256	-400	-407	-542	17,340

<b>Rhode Island</b>	1,351	2,460	75	-532	-48	-62	-78	-136	3,029
<b>South Carolina</b>	1,427	7,869	382	-1,570	-80	-144	-150	-182	7,551
<b>South Dakota</b>	165	784	65	-305	-19	-25	-26	-44	596
<b>Tennessee</b>	2,297	7,878	460	-2,284	-185	-250	-334	-397	7,186
<b>Texas</b>	5,965	25,170	1,709	-7,997	-608	-833	-736	-1,904	20,765
<b>Utah</b>	1,073	2,826	120	-987	-63	-74	-78	-228	2,590
<b>Vermont</b>	651	2,029	68	-490	-51	-68	-37	-62	2,040
<b>Virginia</b>	2,828	10,845	666	-2,236	-279	-351	-257	-615	10,600
<b>Washington</b>	5,646	14,433	1,163	-2,729	-226	-309	-286	-569	17,124
<b>West Virginia</b>	205	1,610	48	-325	-22	-28	-36	-74	1,377
<b>Wisconsin</b>	3,020	7,814	532	-2,392	-141	-161	-222	-310	8,140
<b>Wyoming</b>	281	747	58	-203	-16	-19	-23	-55	770
<b>US TOTAL</b>	<b>147,139</b>	<b>446,416</b>	<b>27,035</b>	<b>-106,320</b>	<b>-10,373</b>	<b>-13,556</b>	<b>-12,479</b>	<b>-23,838</b>	<b>454,024</b>



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

(Negative values denote job growth)

State	March	April	May	June	July	August	September	October	Total
<b>Renewable Electric Power Generation</b>	23,739	71,705	4,272	-17,287	-1,918	-2,571	-2,273	-3,965	71,704
<b>Clean Transmission, Distribution, &amp; Storage</b>	6,517	19,666	1,166	-4,561	-428	-482	-510	-1,042	20,326
<b>Energy Efficiency</b>	103,298	309,584	18,880	-71,786	-6,836	-8,116	-8,354	-16,806	319,864
<b>Clean Fuels</b>	2,186	10,390	657	-2,351	-296	-205	-378	-409	9,594
<b>Clean Vehicles</b>	11,399	35,070	2,059	-10,335	-896	-2,182	-965	-1,615	32,536
<b>Total</b>	<b>147,139</b>	<b>446,416</b>	<b>27,035</b>	<b>-106,320</b>	<b>-10,373</b>	<b>-13,556</b>	<b>-12,479</b>	<b>-23,838</b>	<b>454,024</b>