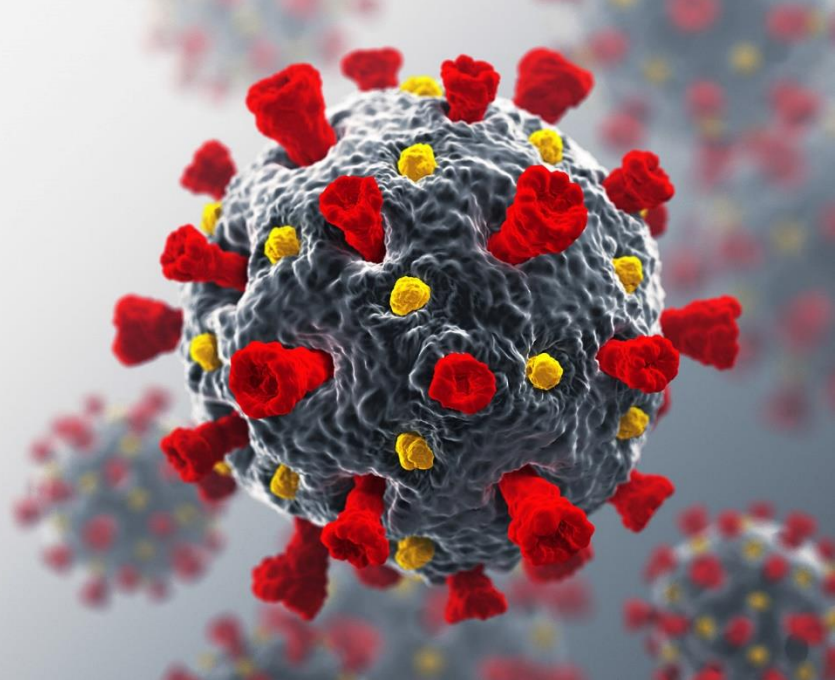


To: E2, E4TheFuture, and ACORE  
From: Philip Jordan  
Vice-President, BW Research Partnership  
Date: February 8, 2021

## MEMORANDUM

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



## INTRODUCTION

BW Research finds that the U.S. clean energy sector added 6,200 jobs in November, leaving 351,800 clean energy workers out of work since February of this year – a 10 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. 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 December 4th jobs report, which showed that the U.S. private economy created 344,000 new jobs over the previous month, covers the first two weeks of November. These new jobs were primarily outside of clean energy and fall in industries like health care, transportation and warehousing, 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 October and September’s dramatic decline. This is likely due to state economies straining under falling revenues and increased COVID-related expenses. Weekly unemployment claims continue at an historic high pace. The December 3rd weekly claims data showed no change in initial jobless claims, and is still at a higher level 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 3.9 million, representing 37 percent of the 10.7 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, 35 percent 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, Dec 4. <https://www.bls.gov/news.release/empsit.nr0.htm>.

This report shows no state or clean energy sector as an especially 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 November unemployment data show job growth was no more than a half percent for each of the clean energy sectors:

- Energy efficiency, the largest clean energy sector, experienced less than a half percent gain in employment, with the addition of 4,300 jobs. The energy efficiency sector continues to suffer from 248,100 job losses impacting more than 10 percent of its workforce. For more information on state level energy efficiency impacts, see Appendix E: State Energy Efficiency Job Growth in November 2020.
- Renewable electric power generation saw a less than half percent rise in employment, with about 1,100 jobs regained in November. A total of 55,400 renewable electric power generation workers (more than 9 percent of the sector's workforce) remain unemployed due to the pandemic.
- Clean fuels and clean transmission, distribution, and storage saw similarly small changes in November, gaining 100 and 250 jobs, respectively. The complete impact of the pandemic on clean fuels and clean transmission, distribution, and storage totals 7,300 and 15,800 lost jobs from their respective, pre-pandemic employment levels. Clean fuels jobs have dropped 7 percent since March, while clean transmission, distribution, and storage jobs have dropped almost 11 percent thus far.
- Clean vehicles added back less than half a percent of its workforce, or about 500 jobs in November. The clean vehicles sector continues to experience a more than 10 percent decline in jobs over its pre-COVID-19 employment levels. This translates to 25,100 ongoing job losses.

California had the largest monthly increase with 1,400 jobs returning in November, which was still less than a half percent of its clean energy workforce. North Carolina saw the highest percentage of clean energy workforce growth at 0.4 percent for a total gain of 350 jobs. Texas, New York, and North Carolina all gained more than 350 clean energy jobs each in November. Alaska, South Dakota, Wyoming, New Hampshire, Montana, and Vermont saw the smallest growth, all with 15 jobs or less gained over the past month. For growth by state, see Appendix A: State Clean Energy Job Growth in November 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 20 states continue to suffer double digit job losses in clean energy with five states facing 15 percent or greater unemployment and one state, Georgia, facing nearly 25 percent unemployment in the sector.

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<sup>3</sup> BLS Employment Situation Summary, Dec 4. <https://www.bls.gov/news.release/empsit.nr0.htm>.

Counties that have lost more than 4,800 clean energy jobs since the beginning of March include Los Angeles County, CA; King County, WA; and Oakland 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 October and November, 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 NOVEMBER 2020

State	CE Job Growth	Percent Growth	State	CE Job Growth	Percent Growth
Alabama	64	0.2%	Montana	14	0.1%
Alaska	9	0.2%	Nebraska	34	0.2%
Arizona	107	0.2%	Nevada	43	0.1%
Arkansas	44	0.2%	New Hampshire	14	0.1%
California	1,353	0.3%	New Jersey	62	0.1%
Colorado	124	0.2%	New Mexico	27	0.2%
Connecticut	70	0.2%	New York	376	0.2%
Delaware	21	0.2%	North Carolina	352	0.4%
District of Columbia	35	0.3%	North Dakota	23	0.3%
Florida	287	0.2%	Ohio	165	0.2%
Georgia	84	0.1%	Oklahoma	36	0.2%
Hawaii	40	0.3%	Oregon	103	0.2%
Idaho	20	0.2%	Pennsylvania	166	0.2%
Illinois	235	0.2%	Rhode Island	28	0.2%
Indiana	111	0.1%	South Carolina	57	0.1%
Iowa	31	0.1%	South Dakota	12	0.1%
Kansas	38	0.2%	Tennessee	155	0.2%
Kentucky	61	0.2%	Texas	471	0.2%
Louisiana	74	0.3%	Utah	52	0.1%
Maine	19	0.2%	Vermont	15	0.1%
Maryland	185	0.2%	Virginia	147	0.2%
Massachusetts	222	0.2%	Washington	129	0.2%
Michigan	172	0.1%	West Virginia	17	0.2%
Minnesota	76	0.1%	Wisconsin	113	0.2%
Mississippi	40	0.2%	Wyoming	13	0.2%
Missouri	70	0.1%	<b>US TOTAL</b>	<b>6,214</b>	<b>0.2%</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	5,771	12.7%	Montana	1,190	10.8%
Alaska	968	15.8%	Nebraska	1,949	8.8%
Arizona	5,306	8.5%	Nevada	3,050	9.0%
Arkansas	1,871	8.7%	New Hampshire	1,026	6.0%
California	58,987	10.7%	New Jersey	7,124	12.4%
Colorado	3,635	5.4%	New Mexico	1,440	11.5%
Connecticut	3,789	8.6%	New York	10,139	6.2%
Delaware	1,405	9.9%	North Carolina	14,026	12.2%
District of Columbia	1,776	11.4%	North Dakota	1,048	10.5%
Florida	18,657	11.1%	Ohio	11,470	9.9%
Georgia	20,915	24.2%	Oklahoma	3,365	14.2%
Hawaii	2,698	18.0%	Oregon	4,994	8.2%
Idaho	1,088	7.8%	Pennsylvania	13,524	13.9%
Illinois	7,464	5.8%	Rhode Island	2,362	14.4%
Indiana	8,884	9.9%	South Carolina	5,885	10.3%
Iowa	3,215	8.8%	South Dakota	460	3.7%
Kansas	2,019	7.6%	Tennessee	5,514	6.4%
Kentucky	8,575	21.9%	Texas	15,930	6.5%
Louisiana	5,671	17.7%	Utah	2,000	4.5%
Maine	1,328	9.7%	Vermont	1,591	8.7%
Maryland	7,101	8.4%	Virginia	8,228	8.3%
Massachusetts	9,965	8.7%	Washington	13,403	15.1%
Michigan	17,598	13.2%	West Virginia	1,071	10.2%
Minnesota	7,229	11.2%	Wisconsin	6,299	8.0%
Mississippi	2,579	11.6%	Wyoming	596	6.7%
Missouri	5,608	9.5%	<b>US TOTAL</b>	<b>351,790</b>	<b>10.2%</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	13,449	14.1%
Washington	King County	6,164	16.4%
Michigan	Oakland County	4,884	15.9%
California	San Diego County	4,716	9.0%
Michigan	Wayne County	4,711	23.4%
Texas	Harris County	4,566	7.8%
California	Orange County	4,508	7.9%
Illinois	Cook County	4,228	7.5%
California	Alameda County	4,010	8.3%
Georgia	Fulton County	3,780	26.8%
California	Santa Clara County	3,754	7.2%
Arizona	Maricopa County	3,516	7.2%
Massachusetts	Middlesex County	3,389	8.9%
California	Riverside County	2,907	11.7%
Minnesota	Hennepin County	2,895	11.6%
New York	New York County	2,654	5.6%
Michigan	Macomb County	2,563	20.1%
California	San Francisco County	2,498	6.6%
North Carolina	Mecklenburg County	2,488	12.1%
Texas	Dallas County	2,431	6.6%
Massachusetts	Suffolk County	2,406	9.9%
Ohio	Cuyahoga County	2,190	15.5%
Kentucky	Jefferson County	2,178	21.9%
California	Kern County	2,176	26.8%
Florida	Palm Beach County	2,083	11.6%
California	Fresno County	2,046	24.1%
North Carolina	Wake County	1,981	11.2%
California	Sacramento County	1,966	10.3%
Indiana	Marion County	1,952	11.7%
Pennsylvania	Allegheny County	1,889	14.9%
Florida	Miami-Dade County	1,869	9.8%
Georgia	Cobb County	1,763	22.7%
Pennsylvania	Philadelphia County	1,745	18.5%
Georgia	Gwinnett County	1,729	23.3%
Rhode Island	Providence County	1,688	17.7%
Florida	Broward County	1,672	11.1%
Missouri	Jackson County	1,654	16.7%
Florida	Hillsborough County	1,642	11.1%
Massachusetts	Essex County	1,631	11.6%
Wisconsin	Dane County	1,613	16.4%

Utah	Utah County	1,608	13.0%
Oregon	Multnomah County	1,600	9.4%
Nevada	Clark County	1,587	10.0%
Hawaii	Honolulu County	1,578	14.8%
California	San Bernardino County	1,568	10.8%
Florida	Orange County	1,536	10.6%
Wisconsin	Waukesha County	1,521	17.0%
Oregon	Washington County	1,512	11.6%
Michigan	Kent County	1,448	14.1%
California	Contra Costa County	1,419	8.8%
Washington	Snohomish County	1,393	17.6%
Virginia	Fairfax County	1,331	6.6%
Wisconsin	Milwaukee County	1,318	10.6%
Georgia	DeKalb County	1,295	26.2%
Florida	Duval County	1,264	11.9%
Connecticut	Hartford County	1,257	9.3%
Missouri	St. Louis County	1,252	9.6%
Massachusetts	Norfolk County	1,233	9.9%
Maryland	Baltimore County	1,211	9.3%
Massachusetts	Worcester County	1,178	12.3%
Ohio	Franklin County	1,172	8.7%
Delaware	New Castle County	1,124	11.7%
Pennsylvania	Montgomery County	1,097	12.1%
Texas	Tarrant County	1,076	6.6%
Connecticut	Fairfield County	1,072	9.3%
Ohio	Hamilton County	1,070	9.3%
Maryland	Prince George's County	1,059	9.3%
Maryland	Montgomery County	1,055	7.2%
Washington	Pierce County	1,046	14.6%
Pennsylvania	Lehigh County	1,028	13.4%
Tennessee	Shelby County	1,010	9.2%
California	Sonoma County	1,001	12.1%
California	San Joaquin County	983	18.4%
Texas	Bexar County	977	6.3%
Massachusetts	Plymouth County	934	14.5%
Texas	Travis County	923	5.1%
Florida	Pinellas County	910	10.8%
Minnesota	Ramsey County	910	15.1%
New York	Suffolk County	906	6.2%
New York	Onondaga County	895	22.9%
California	Ventura County	892	10.1%
Kansas	Johnson County	878	10.8%
Minnesota	Dakota County	872	23.8%

Connecticut	New Haven County	854	9.7%
Utah	Salt Lake County	835	4.9%
Oklahoma	Oklahoma County	805	12.0%
California	San Mateo County	803	6.1%
New Jersey	Morris County	800	14.7%
Colorado	Denver County	799	5.7%
North Carolina	Guilford County	797	12.4%
Illinois	DuPage County	794	5.8%
Alabama	Jefferson County	793	10.9%
South Carolina	Charleston County	773	12.9%
Massachusetts	Hampden County	772	12.3%
Massachusetts	Bristol County	758	14.1%
Louisiana	East Baton Rouge County	708	12.0%
Indiana	Lake County	699	12.9%
Florida	Lee County	699	11.4%
New Jersey	Bergen County	699	10.8%
Ohio	Lucas County	679	14.4%
Iowa	Polk County	669	8.8%
New Jersey	Essex County	667	16.8%
New York	Nassau County	665	5.4%
Illinois	Lake County	662	10.3%
New York	Erie County	649	7.3%
Idaho	Ada County	643	11.4%
New Jersey	Monmouth County	642	11.5%
Ohio	Montgomery County	637	12.6%
Alabama	Madison County	634	10.0%
New York	Queens County	632	5.4%
New Jersey	Middlesex County	631	11.5%
California	Stanislaus County	626	16.0%
Tennessee	Hamilton County	613	11.1%
Pennsylvania	Lancaster County	609	13.3%
Louisiana	Jefferson County	601	14.1%
Tennessee	Davidson County	596	5.0%
Colorado	Jefferson County	587	8.3%
Washington	Clark County	585	11.0%
California	Monterey County	575	17.1%
Minnesota	Anoka County	572	16.2%
New Hampshire	Hillsborough County	570	10.9%
New Mexico	Bernalillo County	569	8.8%
Arizona	Pima County	566	8.1%
Colorado	Adams County	559	10.4%
Colorado	Arapahoe County	558	7.1%
South Carolina	Greenville County	549	7.6%



Washington	Spokane County	544	10.7%
Maryland	Anne Arundel County	531	6.6%
New York	Kings County	528	6.5%
New York	Westchester County	525	6.0%
Nebraska	Douglas County	522	8.2%
California	Placer County	509	7.7%
Pennsylvania	Berks County	508	14.8%
Arkansas	Pulaski County	499	11.3%
Indiana	Allen County	497	9.2%
Missouri	St. Charles County	477	14.3%
Pennsylvania	York County	477	13.0%
California	Santa Barbara County	477	10.1%
Florida	Polk County	474	13.0%
Ohio	Summit County	466	9.0%
Pennsylvania	Bucks County	464	8.9%
Oregon	Clackamas County	464	8.9%
Tennessee	Knox County	455	7.4%
Kansas	Sedgwick County	453	10.0%
Oklahoma	Tulsa County	451	7.3%
Texas	Collin County	449	6.1%
Virginia	Loudoun County	447	8.6%
Ohio	Stark County	445	15.3%
South Carolina	Richland County	430	11.0%
Pennsylvania	Chester County	420	8.2%
California	Tulare County	419	15.8%
New Jersey	Union County	419	13.7%
Ohio	Butler County	412	15.6%
Oregon	Lane County	402	11.3%
Michigan	Washtenaw County	397	10.3%
New York	Monroe County	393	6.7%
Virginia	Prince William County	392	10.1%
Nevada	Washoe County	392	6.3%
New Jersey	Mercer County	391	12.5%
Colorado	El Paso County	378	6.8%
Pennsylvania	Delaware County	371	11.1%
Texas	Nueces County	371	11.7%
Florida	Sarasota County	367	10.1%
Illinois	Will County	360	7.5%
Illinois	Kane County	358	8.6%
New Jersey	Burlington County	356	11.2%
Texas	Montgomery County	342	9.7%
Florida	Volusia County	339	11.8%
Texas	El Paso County	338	7.5%

Florida	Brevard County	332	7.0%
New Jersey	Ocean County	331	10.0%
North Carolina	Forsyth County	327	9.9%
Michigan	Genesee County	319	10.7%
Alabama	Mobile County	316	8.0%
Utah	Davis County	311	8.0%
New Jersey	Camden County	307	10.5%
Texas	Hidalgo County	301	13.0%
New York	Richmond County	296	13.2%
Florida	Collier County	292	8.6%
Florida	Seminole County	287	6.0%
Louisiana	Orleans County	281	10.7%
Florida	Manatee County	275	11.5%
South Carolina	Horry County	260	12.0%
New York	Bronx County	257	8.4%
New Jersey	Hudson County	243	11.2%
California	Solano County	242	8.0%
Texas	Brazoria County	242	10.3%
New Jersey	Passaic County	241	12.2%
Texas	Denton County	240	5.8%
Texas	Williamson County	238	7.7%
Colorado	Larimer County	224	5.8%
Texas	Fort Bend County	211	6.9%
New York	Orange County	175	7.8%
Florida	Marion County	174	8.9%
Florida	Pasco County	174	8.0%
Texas	Cameron County	151	12.4%
Florida	Lake County	136	7.5%
Texas	Bell County	135	9.6%
Florida	Osceola County	109	9.3%
Arizona	Pinal County	79	10.6%

## 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	31,019	21.2%
New York-Northern New Jersey-Long Island, NY-NJ-PA MSA	21,065	13.7%
Chicago-Naperville-Joliet, IL-IN-WI MSA	18,642	18.1%
San Francisco-Oakland-Fremont, CA MSA	15,981	13.0%
Houston-Sugar Land-Baytown, TX MSA	13,278	20.5%
Washington-Arlington-Alexandria, DC-VA-MD-WV MSA	11,871	13.3%
Seattle-Tacoma-Bellevue, WA MSA	10,273	21.2%
Dallas-Fort Worth-Arlington, TX MSA	10,171	17.4%
Detroit-Warren-Livonia, MI MSA	10,144	18.3%
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD MSA	10,102	20.4%
Miami-Fort Lauderdale-Pompano Beach, FL MSA	9,823	16.1%
Atlanta-Sandy Springs-Marietta, GA MSA	9,612	17.4%
Phoenix-Mesa-Scottsdale, AZ MSA	9,481	20.0%
Boston-Cambridge-Quincy, MA-NH MSA	9,009	9.4%
San Diego-Carlsbad-San Marcos, CA MSA	8,891	15.3%
Riverside-San Bernardino-Ontario, CA MSA	7,488	19.5%
Cleveland-Elyria-Mentor, OH MSA	6,693	29.9%
Sacramento-Arden-Arcade-Roseville, CA MSA	5,849	18.2%
Denver-Aurora, CO MSA	5,817	16.7%
Baltimore-Towson, MD MSA	5,742	14.8%
Minneapolis-St. Paul-Bloomington, MN-WI MSA	5,730	13.6%
Las Vegas-Paradise, NV MSA	5,647	25.6%
Portland-Vancouver-Beaverton, OR-WA MSA	4,704	13.2%
Pittsburgh, PA MSA	4,483	24.7%
St. Louis, MO-IL MSA	4,397	16.3%
San Jose-Sunnyvale-Santa Clara, CA MSA	4,239	13.0%
Tampa-St. Petersburg-Clearwater, FL MSA	3,995	18.1%
Cincinnati-Middletown, OH-KY-IN MSA	3,897	19.1%
Austin-Round Rock, TX MSA	3,688	14.0%
Charlotte-Gastonia-Concord, NC-SC MSA	3,620	14.5%
San Antonio, TX MSA	3,587	16.8%
Kansas City, MO-KS MSA	3,188	15.3%
Columbus, OH MSA	3,064	18.1%
Indianapolis-Carmel, IN MSA	3,024	12.2%
Salt Lake City, UT MSA	2,911	16.1%
Louisville/Jefferson County, KY-IN MSA	2,665	18.8%
Milwaukee-Waukesha-West Allis, WI MSA	2,657	13.0%
Orlando-Kissimmee, FL MSA	2,642	15.7%
Virginia Beach-Norfolk-Newport News, VA-NC MSA	2,620	14.2%
Nashville-Davidson-Murfreesboro-Franklin, TN MSA	2,478	10.3%

New Orleans-Metairie-Kenner, LA MSA	2,477	23.4%
Memphis, TN-AR-MS MSA	2,457	16.5%
Raleigh-Cary, NC MSA	2,251	14.0%
Richmond, VA MSA	2,215	13.5%
Reno-Sparks, NV MSA	2,143	21.9%
Hartford-West Hartford-East Hartford, CT MSA	2,141	14.4%
Jacksonville, FL MSA	2,052	18.5%
Buffalo-Niagara Falls, NY MSA	1,666	18.8%
Birmingham-Hoover, AL MSA	1,638	12.3%
Albuquerque, NM MSA	1,534	21.4%
Rochester, NY MSA	1,432	17.2%
Providence-New Bedford-Fall River, RI-MA MSA	1,246	17.3%
Des Moines-West Des Moines, IA MSA	949	14.4%
Oklahoma City, OK MSA	827	9.6%
Flint, MI MSA	599	15.7%
Honolulu, HI MSA	559	5.9%

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

State	EE Job Growth	Percent Growth	State	EE Job Growth	Percent Growth
Alabama	45	0.2%	Montana	12	0.1%
Alaska	7	0.2%	Nebraska	23	0.2%
Arizona	76	0.2%	Nevada	16	0.1%
Arkansas	33	0.2%	New Hampshire	10	0.1%
California	795	0.3%	New Jersey	40	0.1%
Colorado	67	0.2%	New Mexico	13	0.2%
Connecticut	58	0.2%	New York	290	0.2%
Delaware	19	0.2%	North Carolina	271	0.4%
District of Columbia	29	0.3%	North Dakota	13	0.3%
Florida	210	0.2%	Ohio	118	0.2%
Georgia	61	0.1%	Oklahoma	23	0.2%
Hawaii	21	0.4%	Oregon	79	0.2%
Idaho	14	0.2%	Pennsylvania	127	0.2%
Illinois	165	0.2%	Rhode Island	23	0.2%
Indiana	70	0.1%	South Carolina	31	0.1%
Iowa	19	0.1%	South Dakota	7	0.1%
Kansas	26	0.2%	Tennessee	104	0.2%
Kentucky	41	0.2%	Texas	326	0.2%
Louisiana	53	0.3%	Utah	38	0.1%
Maine	13	0.2%	Vermont	9	0.1%
Maryland	153	0.2%	Virginia	118	0.2%
Massachusetts	139	0.2%	Washington	96	0.2%
Michigan	110	0.1%	West Virginia	11	0.2%
Minnesota	56	0.1%	Wisconsin	91	0.2%
Mississippi	29	0.2%	Wyoming	11	0.2%
Missouri	51	0.1%	<b>US TOTAL</b>	<b>4,260</b>	<b>0.2%</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	4,197	13.3%	Montana	997	11.3%
Alaska	770	16.4%	Nebraska	1,320	9.5%
Arizona	3,932	8.8%	Nevada	1,170	9.8%
Arkansas	1,425	9.2%	New Hampshire	750	6.3%
California	35,706	11.0%	New Jersey	4,855	12.8%
Colorado	2,096	5.8%	New Mexico	760	12.5%
Connecticut	3,214	8.9%	New York	7,972	6.3%
Delaware	1,258	10.0%	North Carolina	10,954	12.4%
District of Columbia	1,501	11.6%	North Dakota	616	11.0%
Florida	14,091	11.4%	Ohio	8,511	10.2%
Georgia	15,478	24.6%	Oklahoma	2,197	14.6%
Hawaii	1,216	20.0%	Oregon	3,772	8.8%
Idaho	751	8.3%	Pennsylvania	10,513	14.7%
Illinois	5,431	6.0%	Rhode Island	1,930	14.8%
Indiana	5,846	10.5%	South Carolina	3,264	10.6%
Iowa	2,008	9.5%	South Dakota	301	3.9%
Kansas	1,414	7.9%	Tennessee	3,867	7.2%
Kentucky	5,978	22.8%	Texas	11,431	6.7%
Louisiana	4,173	17.9%	Utah	1,524	4.7%
Maine	932	10.5%	Vermont	1,014	9.2%
Maryland	6,017	8.4%	Virginia	6,755	8.4%
Massachusetts	6,493	9.1%	Washington	10,247	15.8%
Michigan	11,571	13.6%	West Virginia	753	10.5%
Minnesota	5,406	11.5%	Wisconsin	5,163	8.1%
Mississippi	1,894	12.1%	Wyoming	523	6.9%
Missouri	4,164	9.8%	<b>US TOTAL</b>	<b>248,123</b>	<b>10.5%</b>

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

State	Feb - Oct	Nov	Total
Alabama	-5,835	64	-5,771
Alaska	-977	9	-968
Arizona	-5,413	107	-5,306
Arkansas	-1,916	44	-1,871
California	-60,340	1,353	-58,987
Colorado	-3,760	124	-3,635
Connecticut	-3,858	70	-3,789
Delaware	-1,426	21	-1,405
District of Columbia	-1,812	35	-1,776
Florida	-18,944	287	-18,657
Georgia	-20,999	84	-20,915
Hawaii	-2,738	40	-2,698
Idaho	-1,108	20	-1,088
Illinois	-7,699	235	-7,464
Indiana	-8,995	111	-8,884
Iowa	-3,246	31	-3,215
Kansas	-2,057	38	-2,019
Kentucky	-8,636	61	-8,575
Louisiana	-5,745	74	-5,671
Maine	-1,347	19	-1,328
Maryland	-7,286	185	-7,101
Massachusetts	-10,187	222	-9,965
Michigan	-17,770	172	-17,598
Minnesota	-7,305	76	-7,229
Mississippi	-2,619	40	-2,579
Missouri	-5,678	70	-5,608
Montana	-1,205	14	-1,190
Nebraska	-1,983	34	-1,949
Nevada	-3,093	43	-3,050
New Hampshire	-1,040	14	-1,026
New Jersey	-7,186	62	-7,124
New Mexico	-1,467	27	-1,440
New York	-10,515	376	-10,139
North Carolina	-14,378	352	-14,026
North Dakota	-1,071	23	-1,048
Ohio	-11,635	165	-11,470
Oklahoma	-3,402	36	-3,365
Oregon	-5,097	103	-4,994
Pennsylvania	-13,690	166	-13,524
Rhode Island	-2,390	28	-2,362

<b>South Carolina</b>	-5,941	57	-5,885
<b>South Dakota</b>	-472	12	-460
<b>Tennessee</b>	-5,669	155	-5,514
<b>Texas</b>	-16,401	471	-15,930
<b>Utah</b>	-2,052	52	-2,000
<b>Vermont</b>	-1,606	15	-1,591
<b>Virginia</b>	-8,375	147	-8,228
<b>Washington</b>	-13,532	129	-13,403
<b>West Virginia</b>	-1,087	17	-1,071
<b>Wisconsin</b>	-6,411	113	-6,299
<b>Wyoming</b>	-610	13	-596
<b>US TOTAL</b>	<b>-358,004</b>	<b>6,214</b>	<b>-351,790</b>



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

State	Feb - Oct	Nov	Total
<b>Renewable Electric Power Generation</b>	-56,489	1,063	-55,427
<b>Clean Transmission, Distribution, &amp; Storage</b>	-16,048	265	-15,783
<b>Energy Efficiency</b>	-252,384	4,260	-248,123
<b>Clean Fuels</b>	-7,490	117	-7,373
<b>Clean Vehicles</b>	-25,594	509	-25,084
<b>Total</b>	<b>-358,004</b>	<b>6,214</b>	<b>-351,790</b>