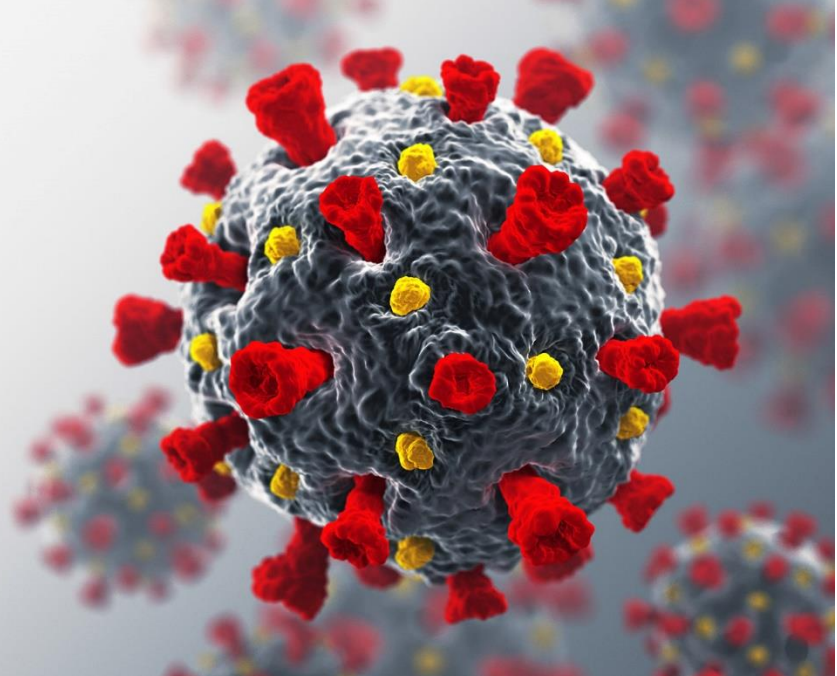


To: E2, E4TheFuture, and ACORE
From: Philip Jordan
Vice-President, BW Research Partnership
Date: January 13, 2021

MEMORANDUM

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



INTRODUCTION

BW Research finds that the U.S. clean energy sector's workforce grew by only 0.6 percent in December, with the addition of 16,900 jobs. This leaves 429,300 clean energy workers out of work since February 2020 – a 12 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 ended 2020 with less of a rebound than expected. Concerns raised in memoranda from prior months continue, including record-breaking levels of new and continuing unemployment claims.

The January 8th jobs report, which showed that the U.S. private economy lost 95,000 jobs over the previous month, covers the first two weeks of December. These lost jobs were primarily outside of clean energy and fall in industries like leisure and hospitality, educational services, and other services. While the recent jobs report shows an employment plateau for the economy at-large, alarming trends remain.

Driven by job losses at the state and local level, public sector employment dropped significantly in this month's jobs report, continuing the dramatic decline over the past three months. This is likely due to state economies straining under falling revenues and increased COVID-related expenses. Weekly unemployment claims continue at an historically high pace. The January 7th weekly claims data showed a slight increase 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.¹ At the same time, the long-term unemployment rate – defined as 27 weeks of consecutive unemployment – has risen sharply since March to 4.0 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 3.4 million job losses, 31 percent of the total unemployed.² 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.

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

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

² Bureau of Labor Statistics (BLS) Employment Situation Summary, Jan 8. <https://www.bls.gov/news.release/empsit.nr0.htm>.

workers continue to suffer from disproportionately high levels of unemployment overall, and Hispanic workers suffered increased unemployment rates in December.³ Women – particularly women of color – lost jobs in December overall while men gained jobs.⁴

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 December 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 more than a half percent gain in employment, with the addition of 12,300 jobs. The energy efficiency sector continues to suffer from 302,200 job losses impacting 13 percent of its workforce. For more information on state level energy efficiency impacts, see Appendix E: State Energy Efficiency Job Growth in December 2020.
- Renewable electric power generation saw a half percent rise in employment, with about 2,800 jobs regained in December. A total of 67,600 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 changes in December, gaining 600 and 750 jobs, respectively. The complete impact of the pandemic on clean fuels and clean transmission, distribution, and storage totals 8,800 and 19,200 lost jobs from their respective, pre-pandemic employment levels. Clean fuels jobs have dropped more than 8 percent since March, while clean transmission, distribution, and storage jobs have dropped 13 percent thus far.
- Clean vehicles added back less than half a percent of its workforce, or about 400 jobs in December. The clean vehicles sector continues to experience a more than 12 percent decline in jobs over its pre-COVID-19 employment levels. This translates to 31,500 ongoing job losses.

California had the largest monthly increase with 3,300 jobs returning in December, or more than a half percent of its clean energy workforce. Hawaii saw the highest percentage of clean energy workforce growth at 1.2 percent for a total gain of more than 100 jobs. Texas, New York, North Carolina, and Florida also gained more than 800 clean energy jobs each in December. South Dakota, Alaska, Wyoming, New Hampshire, Montana, Vermont, and West Virginia saw the smallest growth, all with less than 50 jobs gained over the past month. For growth by state, see Appendix A: State Clean Energy Job Growth in December 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 four

³ BLS Employment Situation Summary, Jan 8. <https://www.bls.gov/news.release/empsit.nr0.htm>.

⁴ Id.

states facing 20 percent or greater unemployment and one state, Georgia, facing 30 percent unemployment in the sector.

Counties that have lost more than 4,000 clean energy jobs since the beginning of March include Los Angeles County, CA; King County, WA; Oakland County, MI; Wayne County, MI; and San Diego County, CA. 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 Metropolitan Statistical Areas (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 Metropolitan Statistical Area (MSA) Clean Energy Job Losses.

METHODOLOGY

Bureau of Labor Statistics (BLS) employment reports for November and December, as well as the Department of Labor (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 DECEMBER 2020

State	CE Job Growth	Percent Growth	State	CE Job Growth	Percent Growth
Alabama	133	0.3%	Montana	42	0.4%
Alaska	35	0.7%	Nebraska	110	0.6%
Arizona	320	0.6%	Nevada	118	0.4%
Arkansas	129	0.7%	New Hampshire	42	0.3%
California	3,311	0.7%	New Jersey	145	0.3%
Colorado	402	0.6%	New Mexico	93	0.9%
Connecticut	274	0.7%	New York	1,030	0.7%
Delaware	58	0.5%	North Carolina	854	0.9%
District of Columbia	100	0.8%	North Dakota	61	0.7%
Florida	823	0.6%	Ohio	449	0.4%
Georgia	286	0.5%	Oklahoma	93	0.5%
Hawaii	139	1.2%	Oregon	280	0.5%
Idaho	56	0.4%	Pennsylvania	399	0.5%
Illinois	677	0.6%	Rhode Island	88	0.7%
Indiana	298	0.4%	South Carolina	164	0.3%
Iowa	100	0.3%	South Dakota	34	0.3%
Kansas	125	0.5%	Tennessee	305	0.4%
Kentucky	109	0.4%	Texas	1,538	0.7%
Louisiana	180	0.7%	Utah	164	0.4%
Maine	54	0.4%	Vermont	44	0.3%
Maryland	477	0.6%	Virginia	407	0.5%
Massachusetts	597	0.6%	Washington	383	0.5%
Michigan	510	0.5%	West Virginia	45	0.5%
Minnesota	214	0.4%	Wisconsin	263	0.4%
Mississippi	99	0.5%	Wyoming	37	0.5%
Missouri	188	0.4%	US TOTAL	16,887	0.6%

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

State	CE Jobs Lost	Percent Decline	State	CE Jobs Lost	Percent Decline
Alabama	7,181	15.8%	Montana	1,463	13.2%
Alaska	1,188	19.4%	Nebraska	2,361	10.7%
Arizona	6,387	10.2%	Nevada	3,740	11.0%
Arkansas	2,239	10.4%	New Hampshire	1,259	7.3%
California	71,615	13.0%	New Jersey	8,886	15.5%
Colorado	4,197	6.2%	New Mexico	1,734	13.8%
Connecticut	4,526	10.3%	New York	11,815	7.2%
Delaware	1,721	12.2%	North Carolina	17,044	14.9%
District of Columbia	2,152	13.9%	North Dakota	1,267	12.7%
Florida	22,814	13.6%	Ohio	14,116	12.2%
Georgia	26,155	30.3%	Oklahoma	4,169	17.6%
Hawaii	3,289	21.9%	Oregon	6,055	10.0%
Idaho	1,321	9.4%	Pennsylvania	16,735	17.2%
Illinois	8,790	6.8%	Rhode Island	2,906	17.8%
Indiana	10,975	12.3%	South Carolina	7,316	12.8%
Iowa	3,975	10.8%	South Dakota	546	4.4%
Kansas	2,439	9.2%	Tennessee	6,682	7.8%
Kentucky	10,730	27.4%	Texas	18,622	7.6%
Louisiana	6,981	21.8%	Utah	2,359	5.3%
Maine	1,628	11.9%	Vermont	1,977	10.9%
Maryland	8,499	10.0%	Virginia	10,006	10.1%
Massachusetts	12,088	10.6%	Washington	16,580	18.6%
Michigan	21,946	16.5%	West Virginia	1,310	12.5%
Minnesota	8,938	13.8%	Wisconsin	7,733	9.8%
Mississippi	3,171	14.3%	Wyoming	715	8.1%
Missouri	6,918	11.7%	US TOTAL	429,258	12.4%

APPENDIX C: CUMULATIVE COUNTY CLEAN ENERGY JOB LOSSES

State	County	CE Jobs Lost	% Decline
California	Los Angeles County	11,579	12.2%
Washington	King County	5,772	15.3%
Michigan	Oakland County	4,388	14.3%
Michigan	Wayne County	4,287	21.3%
California	San Diego County	4,008	7.7%
California	Orange County	3,821	6.7%
Georgia	Fulton County	3,728	26.5%
Texas	Harris County	3,567	6.1%
California	Alameda County	3,402	7.1%
Illinois	Cook County	3,232	5.7%
California	Santa Clara County	3,176	6.1%
Arizona	Maricopa County	3,041	6.2%
Massachusetts	Middlesex County	2,890	7.6%
Minnesota	Hennepin County	2,675	10.7%
California	Riverside County	2,487	10.0%
Michigan	Macomb County	2,319	18.2%
New York	New York County	2,140	4.5%
Kentucky	Jefferson County	2,121	21.4%
California	San Francisco County	2,110	5.5%
North Carolina	Mecklenburg County	2,102	10.2%
Massachusetts	Suffolk County	2,057	8.5%
Ohio	Cuyahoga County	1,939	13.7%
California	Kern County	1,930	23.8%
Texas	Dallas County	1,889	5.1%
Florida	Palm Beach County	1,859	10.4%
California	Fresno County	1,804	21.2%
Indiana	Marion County	1,752	10.5%
Georgia	Cobb County	1,737	22.3%
Pennsylvania	Allegheny County	1,734	13.7%
Georgia	Gwinnett County	1,703	22.9%
California	Sacramento County	1,676	8.8%
North Carolina	Wake County	1,669	9.4%
Florida	Miami-Dade County	1,662	8.7%
Rhode Island	Providence County	1,630	17.1%
Pennsylvania	Philadelphia County	1,608	17.0%
Florida	Broward County	1,490	9.9%
Missouri	Jackson County	1,468	14.8%
Florida	Hillsborough County	1,464	9.9%
Nevada	Clark County	1,435	9.0%
Wisconsin	Waukesha County	1,426	15.9%

Massachusetts	Essex County	1,400	10.0%
Hawaii	Honolulu County	1,399	13.2%
Utah	Utah County	1,369	11.0%
Oregon	Multnomah County	1,368	8.0%
Florida	Orange County	1,368	9.4%
Michigan	Kent County	1,363	13.3%
Oregon	Washington County	1,358	10.4%
California	San Bernardino County	1,339	9.2%
Wisconsin	Dane County	1,339	13.6%
Washington	Snohomish County	1,306	16.5%
Georgia	DeKalb County	1,277	25.9%
California	Contra Costa County	1,205	7.5%
Virginia	Fairfax County	1,180	5.9%
Wisconsin	Milwaukee County	1,160	9.3%
Missouri	St. Louis County	1,136	8.7%
Florida	Duval County	1,129	10.6%
Connecticut	Hartford County	1,093	8.0%
Massachusetts	Norfolk County	1,054	8.5%
Maryland	Baltimore County	1,038	8.0%
Ohio	Franklin County	1,025	7.6%
Massachusetts	Worcester County	1,013	10.6%
Delaware	New Castle County	1,006	10.5%
Pennsylvania	Montgomery County	1,003	11.0%
Washington	Pierce County	978	13.6%
Ohio	Hamilton County	936	8.1%
Connecticut	Fairfield County	932	8.0%
California	Sonoma County	911	11.0%
Maryland	Prince George's County	908	8.0%
Maryland	Montgomery County	900	6.2%
Pennsylvania	Lehigh County	898	11.7%
Massachusetts	Plymouth County	884	13.7%
California	San Joaquin County	855	16.0%
Tennessee	Shelby County	854	7.8%
Minnesota	Ramsey County	836	13.9%
Texas	Tarrant County	836	5.1%
Florida	Pinellas County	811	9.6%
Kansas	Johnson County	804	9.9%
California	Ventura County	760	8.6%
New York	Onondaga County	760	19.4%
Texas	Bexar County	758	4.9%
Oklahoma	Oklahoma County	756	11.3%
Minnesota	Dakota County	753	20.6%
Connecticut	New Haven County	743	8.5%

North Carolina	Guilford County	739	11.5%
New York	Suffolk County	732	5.0%
New Jersey	Morris County	729	13.4%
Massachusetts	Hampden County	728	11.6%
Alabama	Jefferson County	720	9.9%
Texas	Travis County	712	3.9%
South Carolina	Charleston County	708	11.9%
Massachusetts	Bristol County	695	12.9%
California	San Mateo County	677	5.2%
Utah	Salt Lake County	670	4.0%
Indiana	Lake County	651	12.0%
Colorado	Denver County	647	4.6%
New Jersey	Bergen County	642	10.0%
Ohio	Lucas County	625	13.2%
Florida	Lee County	624	10.1%
New Jersey	Essex County	617	15.5%
Louisiana	East Baton Rouge County	606	10.3%
Illinois	DuPage County	602	4.4%
Illinois	Lake County	596	9.3%
Idaho	Ada County	591	10.5%
California	Stanislaus County	581	14.8%
New Jersey	Middlesex County	580	10.6%
Tennessee	Hamilton County	575	10.4%
New Jersey	Monmouth County	571	10.2%
Iowa	Polk County	571	7.5%
Pennsylvania	Lancaster County	565	12.4%
Alabama	Madison County	559	8.8%
Louisiana	Jefferson County	555	13.0%
Washington	Clark County	545	10.3%
New York	Nassau County	536	4.4%
New York	Erie County	527	6.0%
Minnesota	Anoka County	526	14.9%
California	Monterey County	520	15.5%
Ohio	Montgomery County	516	10.2%
Colorado	Adams County	512	9.5%
New York	Queens County	509	4.4%
Washington	Spokane County	499	9.9%
Arizona	Pima County	490	7.0%
Colorado	Arapahoe County	490	6.2%
Colorado	Jefferson County	486	6.9%
Pennsylvania	Berks County	477	13.9%
South Carolina	Greenville County	455	6.3%
California	Placer County	451	6.8%

New Hampshire	Hillsborough County	450	8.6%
New Mexico	Bernalillo County	447	6.9%
Arkansas	Pulaski County	446	10.1%
Nebraska	Douglas County	443	7.0%
Tennessee	Davidson County	440	3.7%
California	Santa Barbara County	436	9.2%
Pennsylvania	York County	436	11.8%
Indiana	Allen County	429	8.0%
Maryland	Anne Arundel County	429	5.3%
Ohio	Summit County	429	8.3%
New York	Kings County	427	5.2%
New York	Westchester County	424	4.9%
Florida	Polk County	424	11.6%
Pennsylvania	Bucks County	421	8.1%
Missouri	St. Charles County	419	12.5%
Ohio	Stark County	410	14.1%
Tennessee	Knox County	409	6.6%
California	Tulare County	396	15.0%
Oregon	Clackamas County	391	7.5%
Ohio	Butler County	380	14.4%
Virginia	Loudoun County	376	7.2%
South Carolina	Richland County	374	9.6%
Kansas	Sedgwick County	374	8.2%
Oklahoma	Tulsa County	365	5.9%
Oregon	Lane County	364	10.3%
Pennsylvania	Chester County	353	6.9%
Virginia	Prince William County	351	9.1%
Texas	Collin County	348	4.7%
New Jersey	Mercer County	346	11.1%
New Jersey	Union County	341	11.1%
Pennsylvania	Delaware County	339	10.2%
Michigan	Washtenaw County	336	8.7%
Texas	Nueces County	332	10.4%
Florida	Sarasota County	331	9.1%
New York	Monroe County	318	5.5%
New Jersey	Burlington County	317	10.0%
Illinois	Will County	315	6.6%
Nevada	Washoe County	311	5.0%
Texas	Montgomery County	309	8.8%
Florida	Volusia County	307	10.7%
Colorado	El Paso County	307	5.6%
Illinois	Kane County	300	7.2%
Michigan	Genesee County	295	9.9%

Alabama	Mobile County	289	7.3%
North Carolina	Forsyth County	287	8.7%
Florida	Brevard County	285	6.0%
New Jersey	Ocean County	280	8.5%
New Jersey	Camden County	265	9.1%
Texas	El Paso County	264	5.8%
New York	Richmond County	262	11.7%
Louisiana	Orleans County	262	9.9%
Florida	Manatee County	252	10.5%
Florida	Collier County	248	7.3%
Florida	Seminole County	245	5.1%
Utah	Davis County	242	6.2%
Texas	Hidalgo County	240	10.3%
South Carolina	Horry County	236	10.9%
New Jersey	Passaic County	217	11.0%
New York	Bronx County	209	6.8%
New Jersey	Hudson County	208	9.6%
Texas	Brazoria County	204	8.7%
California	Solano County	201	6.7%
Texas	Williamson County	198	6.4%
Texas	Denton County	186	4.5%
Colorado	Larimer County	173	4.5%
Texas	Fort Bend County	164	5.4%
Florida	Marion County	153	7.8%
New York	Orange County	149	6.6%
Florida	Pasco County	144	6.6%
Texas	Cameron County	138	11.3%
Texas	Bell County	122	8.7%
Florida	Lake County	112	6.2%
Florida	Osceola County	82	7.0%
Arizona	Pinal County	62	8.2%

APPENDIX D: CUMULATIVE METROPOLITAN STATISTICAL AREA (MSA) CLEAN ENERGY JOB LOSSES

MSA	CE Jobs Lost	% Decline
Los Angeles-Long Beach-Santa Ana, CA MSA	37,904	25.9%
New York-Northern New Jersey-Long Island, NY-NJ-PA MSA	25,468	16.6%
Chicago-Naperville-Joliet, IL-IN-WI MSA	22,849	22.2%
San Francisco-Oakland-Fremont, CA MSA	19,509	15.9%
Houston-Sugar Land-Baytown, TX MSA	16,197	24.9%
Washington-Arlington-Alexandria, DC-VA-MD-WV MSA	14,495	16.3%
Seattle-Tacoma-Bellevue, WA MSA	12,664	26.2%
Dallas-Fort Worth-Arlington, TX MSA	12,432	21.2%
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD MSA	12,379	25.0%
Detroit-Warren-Livonia, MI MSA	12,368	22.3%
Miami-Fort Lauderdale-Pompano Beach, FL MSA	11,967	19.6%
Atlanta-Sandy Springs-Marietta, GA MSA	11,799	21.4%
Phoenix-Mesa-Scottsdale, AZ MSA	11,598	24.4%
Boston-Cambridge-Quincy, MA-NH MSA	10,946	11.4%
San Diego-Carlsbad-San Marcos, CA MSA	10,880	18.7%
Riverside-San Bernardino-Ontario, CA MSA	9,168	23.9%
Cleveland-Elyria-Mentor, OH MSA	8,224	36.7%
Sacramento-Arden-Arcade-Roseville, CA MSA	7,177	22.3%
Denver-Aurora, CO MSA	7,162	20.6%
Minneapolis-St. Paul-Bloomington, MN-WI MSA	7,057	16.8%
Baltimore-Towson, MD MSA	7,003	18.0%
Las Vegas-Paradise, NV MSA	6,888	31.2%
Portland-Vancouver-Beaverton, OR-WA MSA	5,737	16.1%
Pittsburgh, PA MSA	5,511	30.4%
St. Louis, MO-IL MSA	5,420	20.0%
San Jose-Sunnyvale-Santa Clara, CA MSA	5,198	15.9%
Tampa-St. Petersburg-Clearwater, FL MSA	4,899	22.2%
Cincinnati-Middletown, OH-KY-IN MSA	4,800	23.5%
Austin-Round Rock, TX MSA	4,508	17.1%
Charlotte-Gastonia-Concord, NC-SC MSA	4,441	17.8%
San Antonio, TX MSA	4,379	20.6%
Kansas City, MO-KS MSA	3,930	18.9%
Columbus, OH MSA	3,772	22.3%
Indianapolis-Carmel, IN MSA	3,694	14.9%
Salt Lake City, UT MSA	3,586	19.8%
Louisville/Jefferson County, KY-IN MSA	3,280	23.1%
Milwaukee-Waukesha-West Allis, WI MSA	3,246	15.8%
Virginia Beach-Norfolk-Newport News, VA-NC MSA	3,215	17.5%
Orlando-Kissimmee, FL MSA	3,212	19.0%

Nashville-Davidson-Murfreesboro-Franklin, TN MSA	3,035	12.6%
New Orleans-Metairie-Kenner, LA MSA	3,015	28.5%
Memphis, TN-AR-MS MSA	3,005	20.1%
Raleigh-Cary, NC MSA	2,766	17.2%
Richmond, VA MSA	2,717	16.5%
Reno-Sparks, NV MSA	2,637	26.9%
Hartford-West Hartford-East Hartford, CT MSA	2,612	17.6%
Jacksonville, FL MSA	2,521	22.7%
Buffalo-Niagara Falls, NY MSA	2,056	23.3%
Birmingham-Hoover, AL MSA	2,014	15.1%
Albuquerque, NM MSA	1,882	26.2%
Rochester, NY MSA	1,767	21.3%
Providence-New Bedford-Fall River, RI-MA MSA	1,535	21.3%
Des Moines-West Des Moines, IA MSA	1,173	17.9%
Oklahoma City, OK MSA	999	11.6%
Flint, MI MSA	736	19.3%
Honolulu, HI MSA	612	6.5%

CONFIDENTIAL

APPENDIX E: STATE ENERGY EFFICIENCY JOB GROWTH IN DECEMBER 2020

State	EE Job Growth	Percent Growth	State	EE Job Growth	Percent Growth
Alabama	97	0.4%	Montana	37	0.5%
Alaska	29	0.8%	Nebraska	69	0.6%
Arizona	242	0.6%	Nevada	46	0.4%
Arkansas	97	0.7%	New Hampshire	31	0.3%
California	2,145	0.8%	New Jersey	109	0.3%
Colorado	222	0.7%	New Mexico	51	1.0%
Connecticut	243	0.8%	New York	867	0.7%
Delaware	53	0.5%	North Carolina	683	0.9%
District of Columbia	87	0.8%	North Dakota	36	0.7%
Florida	634	0.6%	Ohio	346	0.5%
Georgia	217	0.5%	Oklahoma	66	0.5%
Hawaii	46	1.0%	Oregon	203	0.5%
Idaho	37	0.5%	Pennsylvania	328	0.6%
Illinois	493	0.6%	Rhode Island	72	0.7%
Indiana	200	0.4%	South Carolina	93	0.3%
Iowa	56	0.3%	South Dakota	22	0.3%
Kansas	88	0.5%	Tennessee	216	0.4%
Kentucky	77	0.4%	Texas	1,188	0.8%
Louisiana	140	0.8%	Utah	127	0.4%
Maine	37	0.5%	Vermont	29	0.3%
Maryland	417	0.7%	Virginia	343	0.5%
Massachusetts	391	0.6%	Washington	294	0.6%
Michigan	339	0.5%	West Virginia	33	0.5%
Minnesota	162	0.4%	Wisconsin	216	0.4%
Mississippi	71	0.5%	Wyoming	33	0.5%
Missouri	142	0.4%	US TOTAL	12,301	0.6%

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

State	EE Jobs Lost	Percent Decline	State	EE Jobs Lost	Percent Decline
Alabama	5,216	16.5%	Montana	1,223	13.8%
Alaska	943	20.1%	Nebraska	1,603	11.5%
Arizona	4,726	10.6%	Nevada	1,432	11.9%
Arkansas	1,704	11.0%	New Hampshire	919	7.7%
California	43,186	13.3%	New Jersey	6,042	15.9%
Colorado	2,427	6.7%	New Mexico	911	14.9%
Connecticut	3,828	10.6%	New York	9,236	7.3%
Delaware	1,541	12.3%	North Carolina	13,288	15.1%
District of Columbia	1,816	14.0%	North Dakota	745	13.3%
Florida	17,211	13.9%	Ohio	10,452	12.6%
Georgia	19,340	30.7%	Oklahoma	2,715	18.0%
Hawaii	1,496	24.6%	Oregon	4,577	10.7%
Idaho	913	10.1%	Pennsylvania	12,987	18.2%
Illinois	6,394	7.0%	Rhode Island	2,373	18.2%
Indiana	7,207	12.9%	South Carolina	4,052	13.2%
Iowa	2,486	11.7%	South Dakota	357	4.7%
Kansas	1,706	9.6%	Tennessee	4,678	8.7%
Kentucky	7,468	28.5%	Texas	13,276	7.8%
Louisiana	5,129	22.0%	Utah	1,795	5.5%
Maine	1,143	12.9%	Vermont	1,259	11.4%
Maryland	7,188	10.1%	Virginia	8,205	10.2%
Massachusetts	7,868	11.0%	Washington	12,664	19.5%
Michigan	14,416	16.9%	West Virginia	920	12.9%
Minnesota	6,680	14.2%	Wisconsin	6,337	10.0%
Mississippi	2,329	14.9%	Wyoming	627	8.3%
Missouri	5,130	12.1%	US TOTAL	302,164	12.8%

APPENDIX G: MONTHLY CLEAN ENERGY JOB LOSSES BY STATE

(Negative values denote job growth)

State	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Alabama	1,383	7,261	334	-1,062	-80	-110	-108	-223	-81	-133	7,181
Alaska	328	1,073	88	-163	-17	-22	-17	-37	-11	-35	1,188
Arizona	1,484	7,433	359	-1,440	-159	-184	-191	-460	-137	-320	6,387
Arkansas	555	2,533	119	-480	-52	-72	-54	-124	-57	-129	2,239
California	27,583	77,815	4,313	-19,831	-2,346	-3,097	-2,612	-5,188	-1,712	-3,311	71,615
Colorado	1,326	5,952	252	-1,466	-333	-305	-202	-464	-160	-402	4,197
Connecticut	1,037	5,191	323	-887	-131	-197	-148	-300	-89	-274	4,526
Delaware	729	1,766	99	-539	-43	-45	-50	-111	-27	-58	1,721
District of Columbia	935	1,843	119	-277	-57	-74	-54	-138	-45	-100	2,152
Florida	3,963	25,949	2,563	-5,832	-397	-596	-483	-1,167	-363	-823	22,814
Georgia	1,909	25,282	1,741	-1,579	-121	-174	-159	-358	-100	-286	26,155
Hawaii	908	3,351	154	-612	-55	-32	-64	-174	-49	-139	3,289
Idaho	580	1,229	54	-298	-26	-29	-24	-83	-26	-56	1,321
Illinois	4,524	12,007	926	-4,733	-565	-604	-645	-1,140	-303	-677	8,790
Indiana	3,766	10,954	511	-2,741	-217	-200	-256	-403	-141	-298	10,975
Iowa	1,388	3,758	162	-860	-57	-58	-91	-126	-39	-100	3,975
Kansas	1,023	2,436	125	-556	-82	-104	-80	-149	-49	-125	2,439
Kentucky	2,180	9,383	559	-895	-30	-53	-114	-117	-73	-109	10,730
Louisiana	2,135	6,220	294	-940	-67	-90	-88	-212	-91	-180	6,981
Maine	682	1,382	130	-295	-26	-52	-38	-76	-24	-54	1,628
Maryland	2,857	9,055	726	-2,146	-188	-233	-240	-619	-236	-477	8,499
Massachusetts	6,726	12,147	776	-3,750	-620	-848	-541	-921	-283	-597	12,088
Michigan	7,867	22,245	1,012	-6,465	-437	-351	-530	-670	-215	-510	21,946
Minnesota	3,536	7,628	382	-1,478	-135	-162	-194	-329	-96	-214	8,938
Mississippi	511	3,379	306	-577	-42	-63	-74	-120	-50	-99	3,171
Missouri	2,108	6,864	340	-1,461	-111	-134	-177	-235	-89	-188	6,918
Montana	622	1,213	51	-233	-23	-27	-24	-56	-18	-42	1,463
Nebraska	806	2,495	143	-652	-38	-53	-58	-131	-43	-110	2,361
Nevada	1,176	3,686	149	-767	-51	-73	-71	-136	-55	-118	3,740
New Hampshire	498	1,134	63	-224	-34	-33	-31	-54	-18	-42	1,259
New Jersey	3,252	8,115	422	-1,912	-160	-183	-150	-275	-78	-145	8,886
New Mexico	711	1,759	80	-426	-62	-72	-56	-73	-34	-93	1,734
New York	6,006	13,868	848	-3,314	-549	-1,185	-809	-1,536	-484	-1,030	11,815
North Carolina	9,124	17,138	955	-5,837	-539	-683	-624	-1,193	-442	-854	17,044
North Dakota	335	1,399	120	-311	-26	-40	-47	-72	-29	-61	1,267
Ohio	6,929	12,879	612	-3,837	-286	-331	-447	-744	-209	-449	14,116
Oklahoma	718	4,143	390	-697	-36	-56	-53	-101	-45	-93	4,169
Oregon	1,747	7,206	516	-2,007	-183	-205	-203	-404	-132	-280	6,055

Pennsylvania	8,283	12,780	571	-2,689	-256	-400	-407	-542	-207	-399	16,735
Rhode Island	1,351	2,460	75	-532	-48	-62	-78	-136	-35	-88	2,906
South Carolina	1,427	7,869	382	-1,570	-80	-144	-150	-182	-72	-164	7,316
South Dakota	165	784	65	-305	-19	-25	-26	-44	-16	-34	546
Tennessee	2,297	7,878	460	-2,284	-185	-250	-334	-397	-199	-305	6,682
Texas	5,965	25,170	1,709	-7,997	-608	-833	-736	-1,904	-605	-1,538	18,622
Utah	1,073	2,826	120	-987	-63	-74	-78	-228	-67	-164	2,359
Vermont	651	2,029	68	-490	-51	-68	-37	-62	-19	-44	1,977
Virginia	2,828	10,845	666	-2,236	-279	-351	-257	-615	-188	-407	10,006
Washington	5,646	14,433	1,163	-2,729	-226	-309	-286	-569	-161	-383	16,580
West Virginia	205	1,610	48	-325	-22	-28	-36	-74	-21	-45	1,310
Wisconsin	3,020	7,814	532	-2,392	-141	-161	-222	-310	-144	-263	7,733
Wyoming	281	747	58	-203	-16	-19	-23	-55	-17	-37	715
US TOTAL	147,139	446,416	27,035	-106,320	-10,373	-13,556	-12,479	-23,838	-7,880	-16,887	429,258

CONFIDENTIAL

APPENDIX H: MONTHLY CLEAN ENERGY JOB LOSSES BY MAJOR TECHNOLOGY

(Negative values denote job growth)

	Renewable Electric Power Generation	Clean Transmission, Distribution, & Storage	Energy Efficiency	Clean Fuels	Clean Vehicles	Total
March	23,739	6,517	103,298	2,186	11,399	147,139
April	71,705	19,666	309,584	10,390	35,070	446,416
May	4,272	1,166	18,880	657	2,059	27,035
June	-17,287	-4,561	-71,786	-2,351	-10,335	-106,320
July	-1,918	-428	-6,836	-296	-896	-10,373
August	-2,571	-482	-8,116	-205	-2,182	-13,556
Sept	-2,273	-510	-8,354	-378	-965	-12,479
Oct	-3,965	-1,042	-16,806	-409	-1,615	-23,838
Nov	-1,348	-336	-5,400	-150	-646	-7,880
Dec	-2,779	-752	-12,301	-634	-422	-16,887
Total	67,577	19,238	302,164	8,811	31,468	429,258