

CLEAN JOBS CALIFORNIA

512,934 CLEAN ENERGY JOBS ACROSS CALIFORNIA¹

2019

AMERICA'S CLEAN ENERGY ECONOMY JUGGERNAUT

With nation-leading public policies like the Low Carbon Fuel Standard and Renewables Portfolio Standard, California, with its more than 500,000 workers across clean energy industries, remains far and away the nation's shining example of clean economic prosperity. In fact, even without the state's top two metro areas (Los Angeles and San Francisco), California would still be home to more clean energy workers than any other state.

While the solar energy industry remains the standard bearer of clean energy employment and historical growth in California, other industries are making significant headway; notably, California's clean vehicle industry saw a 22 percent increase in employment in 2018. In 2019, California is expected to once again drive the nation's clean economic growth with state employers projecting nearly a 10 percent increase in jobs across renewable generation, energy efficiency, clean vehicles, grid services, energy storage, and more.

However, there remains significant room for growth as the world's fifth-largest economy takes aim at meeting its ambitious carbon reduction targets. State lawmakers should advance policy that allows for full integration of the Western electric grid to open new markets for California's clean energy resources and reduce customer bills. They should also increase and ensure ongoing, stable funding for clean vehicle incentives. And to provide long-term certainty to boost the market for carbon mitigation and removal technologies, legislators should codify Governor Jerry Brown's executive order committing California to total, economy-wide carbon neutrality by 2045.

CLEAN ENERGY JOBS IN PERSPECTIVE

1 OUT OF 7 clean energy jobs in America are located in California

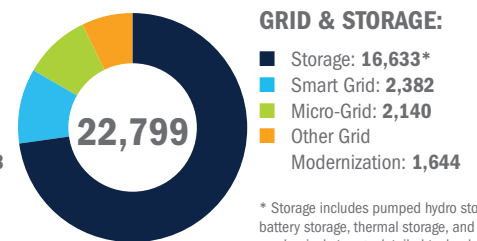
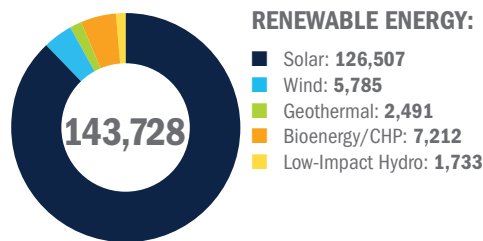
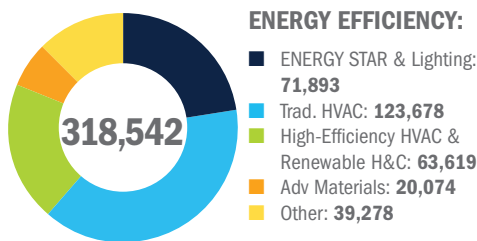
9,678 The average congressional district in California is home to 9,678 clean energy jobs, with every single district supporting at least 2,600 jobs

5X MORE Clean energy employs 5X more workers in California than all fossil fuel industries combined (89K)

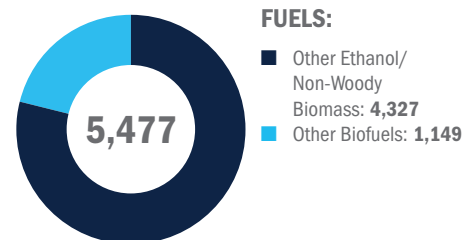
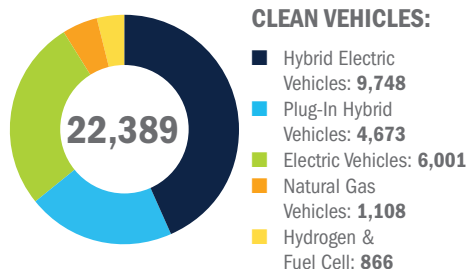
9.7% VETERANS of California's clean energy workers are military veterans, higher than the nation's overall workforce average (6%)

60% of California's clean energy employment is in construction and manufacturing

INDUSTRY BREAKDOWN: JOBS



* Storage includes pumped hydro storage, battery storage, thermal storage, and mechanical storage detailed technologies.



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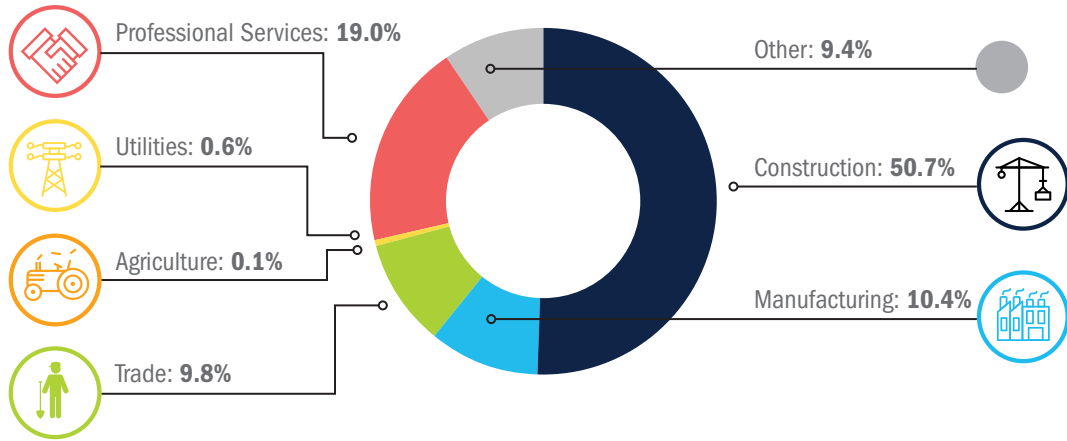
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For more information, contact E2 Western States Advocate **Andy Wunder** at awunder@e2.org.

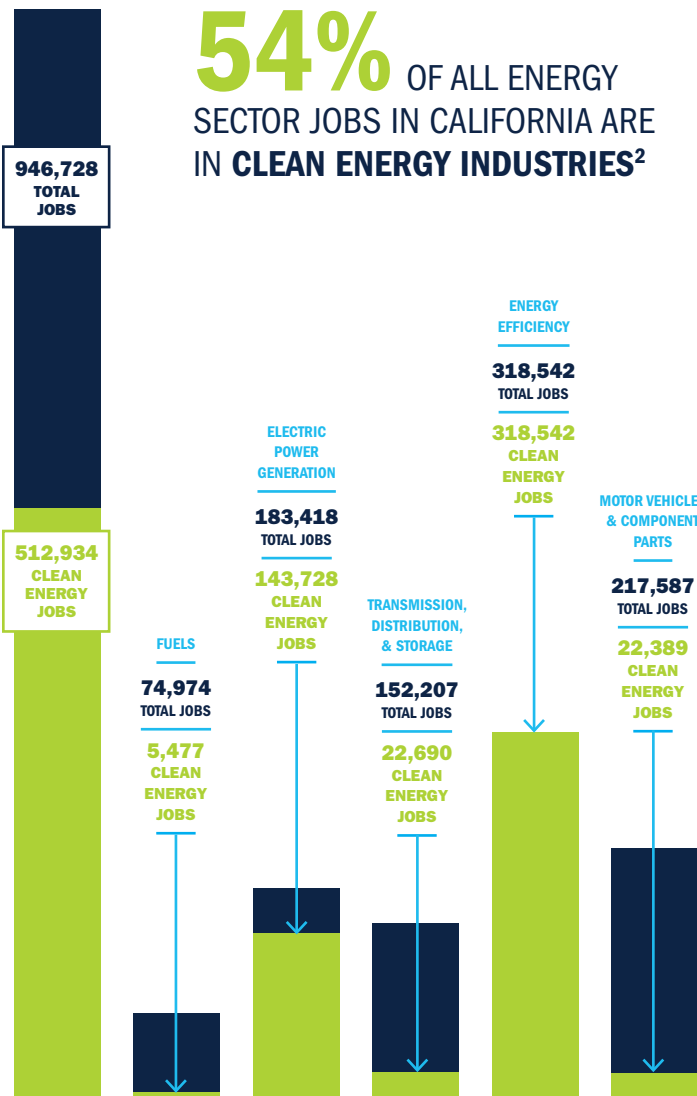
For questions regarding this report, visit E2's report FAQ at <https://www.e2.org/reports/clean-jobs-america-faq>.



CLEAN JOBS BREAKDOWN BY VALUE CHAIN



CLEAN ENERGY IN CALIFORNIA'S ENERGY ECONOMY



CALIFORNIA VS U.S.

THE GOLDEN STATE'S CLEAN ENERGY ECONOMY REMAINS THE NATION'S UNRIVALED BEHEMOTH

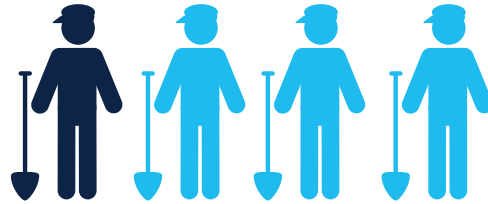
- 318,542** California's energy efficiency industry alone employs more workers than any other state's entire clean energy economy
- <3,000** California's clean vehicle sector is the only clean energy industry the state does not rank first in jobs, trailing Michigan's 25,000+ workers by less than 3,000.
- 37.7%** Nearly 4 in 10 U.S. solar energy jobs are located in California
- 1.5X** California clean energy employers project adding jobs 50% faster (9.4% growth) than the national average (6.3%)
- #5 #10** If included in E2's state rankings for clean energy jobs, Los Angeles (151K) and San Francisco (97K) metro areas would both rank in the Top 10—No. 5 and No. 10 respectively. Combined (248K), the two metros would trail only California and its remaining 264,000 jobs

IMPACT BEYOND THE COASTS

- 11,155** rural Californians are employed in clean energy
- 21%** More than **2 out of every 5 clean energy jobs** in California are in regions outside of the San Francisco Bay, Los Angeles, and San Diego metro areas
- 21%** of California's renewable generation workers are employed in metros areas with a population under 1 million

SMALL BUSINESSES FUEL SUCCESS

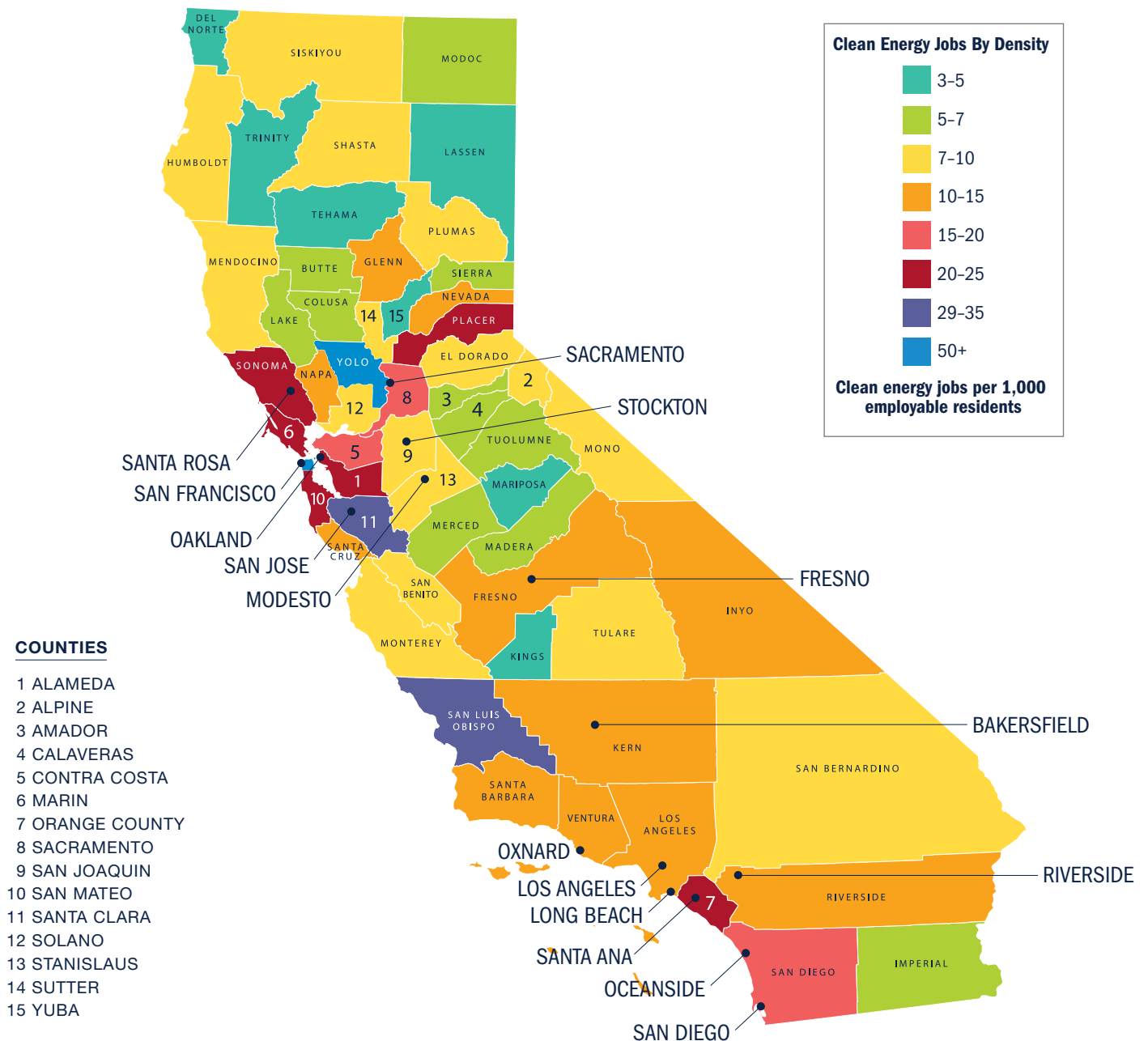
1 OUT OF EVERY 4
CLEAN ENERGY WORKERS
is employed by businesses with
fewer than 5 employees



CLEAN ENERGY WORKERS BY BUSINESS SIZE:

- 1-4 EMPLOYEES: 26.5%**
- 5-19 EMPLOYEES: 31.1%**
- 20-99 EMPLOYEES: 30.4%**
- 100-499 EMPLOYEES: 10%**
- 500+ EMPLOYEES: 1.9%**

CALIFORNIA CLEAN ENERGY JOBS BY DENSITY



CLEAN ENERGY JOBS BY METRO AREA

Metro Area	Clean Energy Jobs*	Renewable Gen. Jobs	Energy Efficiency Jobs
Los Angeles-Long Beach-Santa Ana	151,380	36,223	99,368
San Francisco-Oakland-Fremont	97,139	34,178	54,308
San Diego-Carlsbad-San Marcos	56,562	16,623	34,364
Riverside-San Bernardino-Ontario	38,368	10,174	24,317
San Jose-Sunnyvale-Santa Clara	31,724	9,796	18,954
Sacramento-Arden-Arcade-Roseville	31,426	9,084	19,321
Santa Rosa-Petaluma	10,473	3,421	6,086
Fresno	10,002	2,530	6,454
Oxnard-Thousand Oaks-Ventura	9,827	2,093	6,679
San Luis Obispo-Paso Robles	9,578	4,322	4,539

Metro Area	Clean Energy Jobs*	Renewable Gen. Jobs	Energy Efficiency Jobs
Santa Barbara-Santa Maria-Goleta	8,489	1,716	5,850
Bakersfield	7,887	2,433	4,706
Stockton	6,067	1,696	3,775
Modesto	4,650	919	3,222
Salinas	4,573	946	3,132
Santa Cruz-Watsonville	3,538	722	2,389
Chico	3,265	896	2,050
Visalia-Porterville	3,102	755	2,027
Vallejo-Fairfield	3,097	559	2,192
Redding	2,722	489	1,927
Napa	2,353	478	1,619
Merced	1,347	281	921
Yuba City	1,263	251	874
El Centro	1,186	265	796
Madera	1,106	213	771
Hanford-Corcoran	657	145	442

* Total includes all clean energy jobs categories, including solar, wind, energy efficiency, clean vehicles, battery storage, advanced biofuels, low-impact hydro and other areas.

CLEAN ENERGY JOBS BY COUNTY³

County	Clean Energy Jobs*	Renewable Gen. Jobs	Energy Efficiency Jobs
Los Angeles	94,341	16,898	66,540
Orange	54,373	9,696	37,831
Santa Clara	52,552	20,009	29,253
San Diego	50,705	14,142	32,325
San Francisco	38,104	17,503	18,985
Alameda	29,944	9,948	17,119
Riverside	23,722	6,735	14,400
Sacramento	18,528	5,176	11,889
Contra Costa	16,179	6,221	8,869
San Bernardino	14,030	2,019	9,654
San Mateo	12,984	2,702	9,036
Yolo	8,666	7,062	1,264
Ventura	8,483	1,580	5,779
Sonoma	8,439	3,869	4,023
Fresno	7,899	1,658	5,143
Kern	7,240	1,928	4,220
San Luis Obispo	6,898	4,396	2,186

County	Clean Energy Jobs*	Renewable Gen. Jobs	Energy Efficiency Jobs
Placer	6,853	2,661	3,773
San Joaquin	4,949	1,131	3,100
Santa Barbara	4,576	642	3,373
Marin	4,389	1,505	2,584
Stanislaus	3,763	590	2,621
Solano	2,944	222	2,133
Monterey	2,891	464	1,816
Tulare	2,512	482	1,652
Santa Cruz	2,268	459	1,441
Butte	2,031	775	1,068
Napa	1,482	192	1,143
El Dorado	1,457	168	1,127
Shasta	1,393	267	957
Nevada	1,062	246	731
Merced	1,057	256	589
Imperial	908	310	456
Humboldt	906	216	607

CLEAN JOBS CALIFORNIA

CLEAN ENERGY JOBS BY COUNTY CONTINUED

County	Clean Energy Jobs*	Renewable Gen. Jobs	Energy Efficiency Jobs
Madera	786	121	546
Sutter	516	52	334
Mendocino	506	94	342
Kings	408	72	263
San Benito	379	26	309
Lake	357	182	153
Tuolumne	303	58	205
Siskiyou	254	93	127
Tehama	234	46	125
Calaveras	230	36	179
Yuba	224	21	172
Inyo	222	151	60

County	Clean Energy Jobs*	Renewable Gen. Jobs	Energy Efficiency Jobs
Amador	180	41	118
Plumas	130	25	94
Glenn	113	20	60
Mono	112	16	92
Lassen	104	23	55
Colusa	91	17	34
Del Norte	84	15	61
Mariposa	66	16	47
Modoc	43	13	22
Trinity	30	12	14
Sierra	14	6	8
Alpine	8	4	3

* Total includes all clean energy jobs categories, including solar, wind, energy efficiency, clean vehicles, battery storage, advanced biofuels, low-impact hydro and other areas.

CALIFORNIA CLEAN ENERGY JOBS BY DISTRICT

Data shows that distribution of clean energy jobs in California crosses all political boundaries, with clean energy jobs in every congressional, state senate, and state assembly district.

U.S. CONGRESSIONAL DISTRICTS

District	Clean Energy Jobs*	Renewable Gen. Jobs	Energy Efficiency Jobs
1 (Rep. LaMalfa)	13,082	3,324	8,428
2 (Rep. Huffman)	19,345	5,696	11,789
3 (Rep. Garamendi)	10,495	2,881	6,585
4 (Rep. McClintock)	12,282	3,706	7,406
5 (Rep. Thompson)	7,121	1,999	4,424
6 (Rep. Matsui)	10,007	2,607	6,402
7 (Rep. Bera)	5,582	1,392	3,624
8 (Rep. Cook)	6,982	1,705	4,558
9 (Rep. McNerney)	7,441	2,023	4,688
10 (Rep. Harder)	6,001	1,560	3,836
11 (Rep. DeSaulnier)	17,858	6,565	9,753
12 (Rep. Pelosi)	31,459	12,579	16,313
13 (Rep. Lee)	14,010	4,669	8,112
14 (Rep. Speier)	10,652	2,485	6,940
15 (Rep. Swalwell)	9,827	3,655	5,308
16 (Rep. Costa)	7,954	2,061	5,089
17 (Rep. Khanna)	16,991	5,425	10,006
18 (Rep. Eshoo)	10,083	2,423	6,571

District	Clean Energy Jobs*	Renewable Gen. Jobs	Energy Efficiency Jobs
19 (Rep. Lofgren)	4,739	1,078	3,161
20 (Rep. Panetta)	5,589	1,092	3,884
21 (Rep. Cox)	6,224	1,443	4,128
22 (Rep. Nunes)	4,262	1,026	2,795
23 (Rep. McCarthy)	5,950	2,104	3,317
24 (Rep. Carbajal)	18,041	5,351	10,959
25 (Rep. Hill)	7,302	1,341	5,148
26 (Rep. Brownley)	5,411	1,127	3,699
27 (Rep. Chu)	11,730	1,945	8,456
28 (Rep. Schiff)	12,801	3,002	8,420
29 (Rep. Cárdenas)	3,918	864	2,638
30 (Rep. Sherman)	8,987	1,791	6,214
31 (Rep. Aguilar)	3,911	1,009	2,506
32 (Rep. Napolitano)	6,109	1,664	3,839
33 (Rep. Lieu)	17,825	4,411	11,583
34 (Rep. Gomez)	8,250	1,836	5,514
35 (Rep. Torres)	7,889	1,504	5,526
36 (Rep. Ruiz)	8,840	3,362	4,727

CLEAN JOBS CALIFORNIA

U.S. CONGRESSIONAL DISTRICTS CONTINUED

District	Clean Energy Jobs*	Renewable Gen. Jobs	Energy Efficiency Jobs
37 (Rep. Bass)	6,091	1,354	4,094
38 (Rep. Sánchez)	6,708	1,837	4,207
39 (Rep. Cisneros)	11,254	2,412	7,636
40 (Rep. Roybal-Allard)	4,421	1,568	2,464
41 (Rep. Takano)	9,252	3,045	5,359
42 (Rep. Calvert)	5,689	1,674	3,429
43 (Rep. Waters)	5,493	1,734	3,246
44 (Rep. Barragán)	2,805	643	1,867

District	Clean Energy Jobs*	Renewable Gen. Jobs	Energy Efficiency Jobs
45 (Rep. Porter)	21,622	5,239	14,140
46 (Rep. Correa)	4,546	1,396	2,721
47 (Rep. Lowenthal)	7,750	3,328	3,821
48 (Rep. Rouda)	8,652	2,420	5,360
49 (Rep. Levin)	18,539	4,601	12,029
50 (Rep. Hunter)	7,446	1,630	5,022
51 (Rep. Vargas)	8,788	1,868	5,964
52 (Rep. Peters)	16,320	5,643	9,133
53 (Rep. Davis)	2,605	634	1,702

* Total includes all clean energy jobs categories, including solar, wind, energy efficiency, clean vehicles, battery storage, advanced biofuels, low-impact hydro and other areas.

STATE ASSEMBLY DISTRICTS

District	Clean Energy Jobs
1 (Vacant)	10,306
2 (Asm. Wood)	7,944
3 (Asm. Gallagher)	3,205
4 (Asm. Aquiar-Curry)	11,465
5 (Asm. Bigelow)	5,660
6 (Asm. Kiley)	10,440
7 (Asm. McCarty)	12,230
8 (Asm. Cooley)	1,958
9 (Asm. Cooper)	1,638
10 (Asm. Levine)	7,900
11 (Asm. Frazier)	3,414
12 (Asm. Flora)	6,126
13 (Asm. Eggman)	2,939
14 (Asm. Grayson)	12,486
15 (Asm. Wicks)	10,400
16 (Asm. Bauer-Kahan)	4,323
17 (Asm. Chiu)	31,632
18 (Asm. Bonta)	8,780
19 (Asm. Ting)	2,964
20 (Asm. Quirk)	8,486
21 (Asm. Gray)	1,901
22 (Asm. Mullin)	8,166
23 (Asm. Patterson)	8,465
24 (Asm. Berman)	10,062
25 (Asm. Chu)	15,050
26 (Asm. Mathis)	4,694
27 (Asm. Kalra)	2,596

District	Clean Energy Jobs
28 (Asm. Low)	4,691
29 (Asm. Stone)	7,075
30 (Asm. Rivas)	2,691
31 (Asm. Arambula)	1,764
32 (Asm. Salas)	3,105
33 (Asm. Obernolte)	4,488
34 (Asm. Fong)	3,245
35 (Asm. Cunningham)	11,734
36 (Asm. Lackey)	3,765
37 (Asm. Limón)	11,449
38 (Asm. Smith)	7,309
39 (Asm. Rivas)	4,104
40 (Asm. Ramos)	4,672
41 (Asm. Holden)	8,136
42 (Asm. Mayes)	7,416
43 (Asm. Friedman)	5,683
44 (Asm. Irwin)	3,386
45 (Asm. Gabriel)	9,006
46 (Asm. Nazarian)	3,175
47 (Asm. Reyes)	1,900
48 (Asm. Rubio)	3,994
49 (Asm. Chau)	3,021
50 (Asm. Bloom)	14,603
51 (Asm. Carrillo)	4,414
52 (Asm. Rodriguez)	7,065
53 (Asm. Santiago)	5,309
54 (Asm. Kamlager-Dove)	4,540

District	Clean Energy Jobs
55 (Asm. Chen)	6,252
56 (Asm. Garcia)	1,483
57 (Asm. Calderon)	4,740
58 (Asm. Garcia)	1,273
59 (Asm. Jones-Sawyer Sr.)	738
60 (Asm. Cervantes)	3,062
61 (Asm. Medina)	4,807
62 (Asm. Burke)	3,891
63 (Asm. Rendon)	5,010
64 (Asm. Gipson)	3,506
65 (Asm. Quirk-Silva)	6,105
66 (Asm. Muratsuchi)	3,097
67 (Asm. Melendez)	4,549
68 (Asm. Choi)	13,868
69 (Asm. Daly)	4,600
70 (Asm. O'Donnell)	3,813
71 (Asm. Voepel)	7,459
72 (Asm. Diep)	3,911
73 (Asm. Brough)	6,243
74 (Asm. Petrie-Norris)	8,441
75 (Asm. Waldron)	6,797
76 (Asm. Boerner Horvath)	5,724
77 (Asm. Maienschein)	21,301
78 (Asm. Gloria)	12,558
79 (Asm. Weber)	2,605
80 (Asm. Gonzalez)	127

CLEAN JOBS CALIFORNIA

STATE SENATE DISTRICTS

District	Clean Energy Jobs	District	Clean Energy Jobs	District	Clean Energy Jobs	District	Clean Energy Jobs
1 (Sen. Dahle)	20,160	11 (Sen. Wiener)	32,748	21 (Sen. Wilk)	6,157	31 (Sen. Roth)	6,401
2 (Sen. McGuire)	17,378	12 (Sen. Caballero)	6,414	22 (Sen. Rubio)	10,273	32 (Sen. Archuleta)	6,333
3 (Sen. Dodd)	19,132	13 (Sen. Hill)	14,886	23 (Sen. Morrell)	7,509	33 (Sen. Gonzalez)	9,466
4 (Sen. Nielsen)	8,669	14 (Sen. Hurtado)	9,305	24 (Sen. Durazo)	13,413	34 (Sen. Umberg)	14,256
5 (Sen. Galgiani)	9,311	15 (Sen. Beall)	8,848	25 (Sen. Portantino)	7,517	35 (Sen. Bradford)	6,221
6 (Sen. Pan)	9,340	16 (Sen. Grove)	6,893	26 (Sen. Allen)	18,552	36 (Sen. Bates)	19,833
7 (Sen. Glazer)	12,628	17 (Sen. Monning)	17,196	27 (Sen. Stern)	11,998	37 (Sen. Moorlach)	15,787
8 (Sen. Borgeas)	12,674	18 (Sen. Hertzberg)	12,894	28 (Sen. Stone)	11,334	38 (Sen. Jones)	16,029
9 (Sen. Skinner)	18,954	19 (Sen. Jackson)	12,814	29 (Sen. Chang)	12,455	39 (Sen. Atkins)	21,216
10 (Sen. Wiekowski)	23,505	20 (Sen. Leyva)	11,856	30 (Sen. Mitchell)	8,320	40 (Sen. Hueso)	4,260

ENDNOTES

- 1 Unless otherwise stated, the data and analyses presented in Clean Jobs America E2 (Environmental Entrepreneurs) are based on data collected for the 2019 U.S. Energy Employment Report (2019 USEER), produced by the Energy Futures Initiative (EFI) in partnership with the National Association of State Energy Officials (NASEO) and collected and analyzed by BW Research Partnership (BWRP). See Pages 9-13 for methodology questions. For more questions regarding methodology, visit <https://www.e2.org/clean-jobs-america-faq>.
- 2 Based on the 2019 U.S. Energy and Employment Report individual state snapshot for California, available at <http://usenergyjobs.org>.
- 3 County employable population data based on 2017 American Community Survey (ACS) 5-year estimate of residents 16 years and older from the U.S. Census Bureau accessible at <https://factfinder.census.gov>.

PRESENTED BY:



E2 is a national, nonpartisan group of business leaders, investors and others who advocate for smart policies that are good for the environment and good for the economy.



Clean Jobs Count is a campaign to raise awareness of the economic importance of the clean economy. Visit www.cleanjobscount.org to join thousands of business leaders, workers and others to tell lawmakers and policymakers that clean jobs count.

THANKS TO SUPPORT FROM:

E2 wishes to express its appreciation to the **National Association of State Energy Officials** (NASEO), the **Energy Futures Initiative** (EFI) and **BW Research Partnership** (“BWRP”) who made this report possible by producing the USEER and its underlying data.

