

DRIVING JOB GROWTH IN THE COMMONWEALTH

Clean jobs in Virginia grew by nearly 4.5 percent in 2021, more than tripling the employment growth rate of the commonwealth economy-wide. That growth also reflects the clean energy economy's strong recovery from the COVID-19 economic downturn and sets Virginia up for even more clean energy job growth in the years to come—especially with key state climate and clean energy policies remaining in place and unprecedented levels of federal clean energy investments becoming available for deployment.

KEY FINDINGS

TOP 15

VIRGINIA WAS HOME TO 2.9 PERCENT OF THE NATION'S TOTAL CLEAN ENERGY JOBS, 11TH AMONG ALL 50 STATES

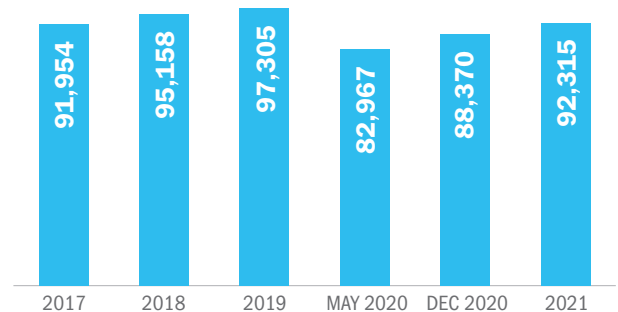
3.5X

VIRGINIA'S CLEAN ENERGY JOBS GREW MORE THAN 3.5 TIMES FASTER YEAR-OVER-YEAR THAN OVERALL EMPLOYMENT IN THE COMMONWEALTH: 4.5 PERCENT COMPARED TO JUST 1.3 PERCENT

65%

ALMOST TWO-THIRDS OF THE MORE THAN 14,000 CLEAN ENERGY JOBS LOST IN VIRGINIA DURING THE COVID-19 ECONOMIC DOWNTURN HAD BEEN REGAINED BY THE END OF 2021

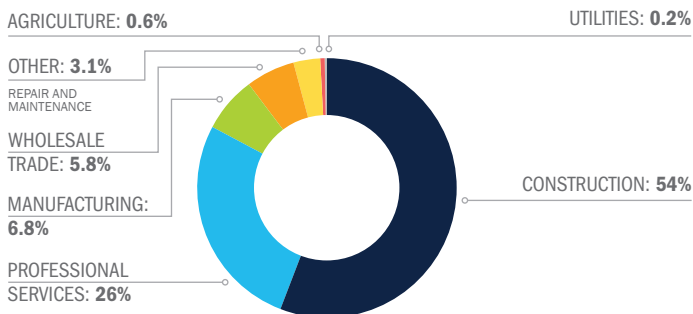
Fig. 1 // VIRGINIA CLEAN ENERGY EMPLOYMENT by year 2017–2021



92,315

Virginia's clean energy jobs have grown 11.3 percent since the nadir of COVID-19, driven primarily by growth in solar and wind electric generation and clean vehicles

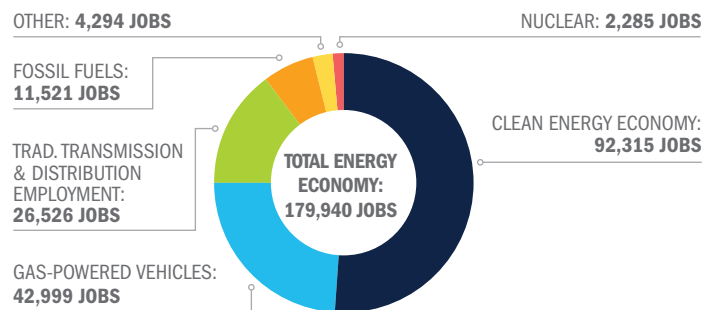
Fig. 2 // VIRGINIA CLEAN ENERGY EMPLOYMENT by value chain 2021



1 IN 5

construction sector jobs in Virginia are in clean energy industries

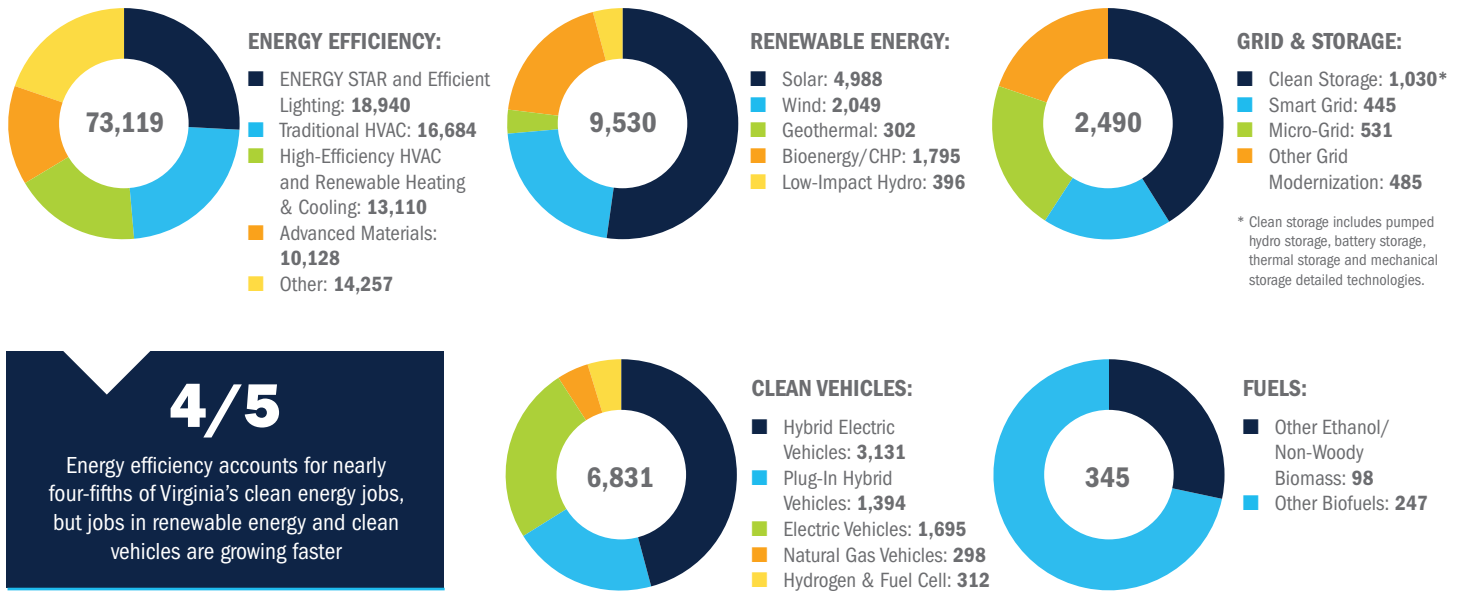
Fig. 3 // CLEAN ECONOMY EMPLOYMENT vs rest of energy economy, 2021



51%

of all energy sector jobs in Virginia are in clean energy industries (8 times more than fossil fuels)²

Fig. 4 // VIRGINIA CLEAN ENERGY EMPLOYMENT by subsector 2021



POLICIES MATTER

For years now, Virginia has been in the national vanguard of the clean energy economy, perennially in or near the top 10 states in terms of clean energy jobs.

And the commonwealth's recent adoption of ambitious climate and clean energy policies should serve to secure Virginia's leadership position. From the passage of the Virginia Clean Economy Act, which established a 100% renewable energy standard; to joining the Regional Greenhouse Gas Initiative, which generates funds for energy efficiency and flood mitigation while reducing electricity sector emissions; to the adoption of Advanced Clean Cars, which ramps up the availability of electric vehicles in the commonwealth, Virginia's leadership has demonstrated that they understand the connection between smart policies and the growth in the clean energy economy.

Thankfully, despite misguided efforts to the contrary by some policymakers, Virginia chose to stay the course on these bedrock clean

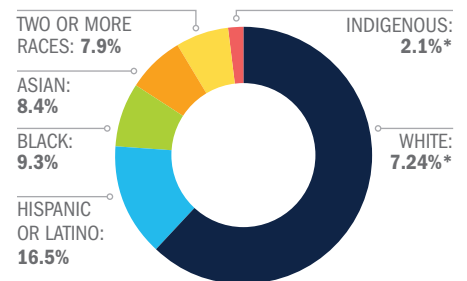
energy policies during the 2023 legislative session. Kept in place, these policies will continue to send a clear signal that the commonwealth is committed long-term to a clean energy future. In turn, that will empower clean energy companies in Virginia to continue to invest and grow jobs across the commonwealth.

With the 2023 legislative session over, Virginia's leaders should now unify in support of these bedrock clean energy policies driving economic benefits for the commonwealth and turn their attention to leveraging federal clean energy investments to Virginia's benefit. By harnessing federal funding made available through the Bipartisan Infrastructure Law and the Inflation Reduction Act, Virginia can invest in the infrastructure and technologies needed to drive greater deployment of electric vehicles, renewable energy projects, and other clean energy solutions, with an emphasis on investments in disadvantaged communities.

BLACK VIRGINIANS STILL UNDERREPRESENTED

African-Americans are significantly underrepresented in Virginia's clean energy economy; 20 percent of Virginians are black, but less than 9 percent of Virginia's clean energy workforce is black.³ This discrepancy reflects the continued need for clean energy workforce development programs in Virginia, with an emphasis on historically marginalized communities.

Fig. 4 // VIRGINIA CLEAN ENERGY EMPLOYMENT by race and ethnicity 2021



* Includes non-Hispanic and Hispanic white respondents. Note: Chart does not add up to 100% because Hispanic or Latino is classified by the U.S. Census as an ethnicity and not a race.

VIRGINIA CLEAN ENERGY EMPLOYMENT: 2022 LOCAL FINDINGS

Fig. 5 // VIRGINIA EMPLOYMENT by share of total county employment 2021⁴

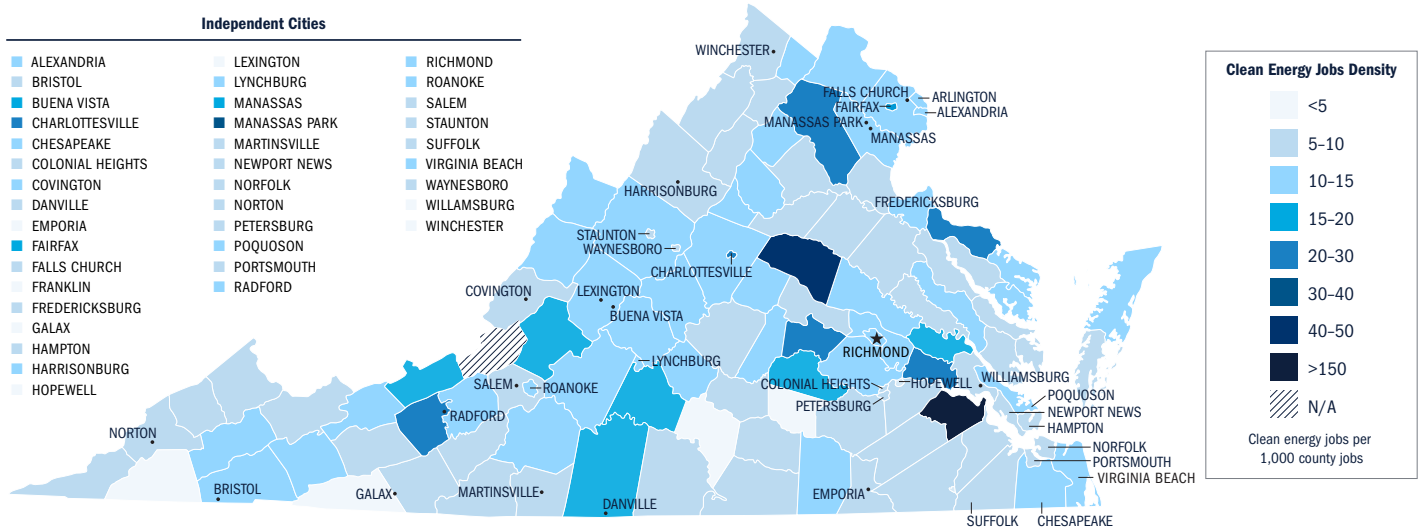


Table 1// VIRGINIA CLEAN ENERGY EMPLOYMENT by county 2021

County*	Renewable Generation Jobs	Energy Efficiency Jobs	Clean Vehicle Jobs	Total Clean Energy Jobs [†]	Clean Energy Job Density ^{†,5}
Craig	<10	<10	<10	<10	N/A
Surry	529	22	<10	569	152.16
Louisa	538	225	14	826	40.80
Manassas Park City	<10	232	16	257	34.18
Pulaski	14	95	565	685	23.14
Powhatan	40	259	25	330	22.03
Charlottesville City	613	793	30	1,486	22.02
Charles City	<10	52	<10	71	21.65
Manassas City	49	814	57	936	19.96
Fairfax City	137	588	31	764	19.92
New Kent	<10	178	10	194	18.21
Botetourt	52	118	183	368	17.19
Buena Vista City	<10	58	<10	61	17.12
Campbell	15	472	75	572	16.39
Amelia	<10	60	<10	74	16.12
Giles	<10	146	<10	164	15.85
Fauquier	28	600	46	689	15.68
Westmoreland	<10	49	40	102	15.65
Pittsylvania	13	233	130	388	15.37
Fairfax	1,394	16,311	525	18,528	14.94

County*	Renewable Generation Jobs	Energy Efficiency Jobs	Clean Vehicle Jobs	Total Clean Energy Jobs†	Clean Energy Job Density* ⁵
Bland	<10	42	<10	45	14.94
Harrisonburg City	25	595	177	806	14.89
York	22	505	43	585	14.76
Roanoke City	196	1,466	98	1,889	14.69
Smyth	<10	147	197	351	14.60
Lynchburg City	353	995	52	1,430	14.48
Radford City	<10	121	10	138	14.36
Chesapeake City	110	2,406	287	2,886	14.18
Highland	<10	<10	<10	10	14.14
Alexandria City	255	2,064	72	2,430	14.12
Madison	<10	76	<10	88	13.98
Hanover	83	1,272	136	1,529	13.92
Loudoun	431	3,978	227	4,826	13.61
Fluvanna	<10	98	<10	109	13.49
Prince William	104	3,089	221	3,573	13.47
Greene	<10	84	<10	100	13.42
Arlington	1,206	2,985	49	4,408	12.79
Richmond City	764	2,817	193	3,876	12.75
Montgomery	20	677	175	900	12.62
Cumberland	<10	29	<10	32	12.55
Bath	<10	38	<10	49	12.47
Washington	10	310	141	468	12.08
Covington City	<10	78	<10	88	12.00
Virginia Beach City	289	3,483	288	4,145	11.92
Rappahannock	<10	33	<10	38	11.90
Clarke	<10	79	<10	88	11.87
Russell	<10	135	<10	150	11.81
Northumberland	<10	49	<10	59	11.78
Chesterfield	187	2,708	222	3,229	11.35
Henrico	555	3,208	201	4,139	11.08
King George	<10	242	10	269	11.04
Bedford	13	342	34	409	11.02
King and Queen	<10	19	<10	25	10.98
Brunswick	13	48	<10	68	10.97
Augusta	21	527	36	614	10.79
Appomattox	<10	61	<10	72	10.73
Nelson	<10	58	<10	79	10.65
Accomack	<10	210	<10	244	10.56
Amherst	23	117	15	160	10.46
Poquoson City	<10	27	<10	32	10.41
Lancaster	<10	76	<10	91	10.24
Franklin	10	255	41	317	10.21
Rockbridge	<10	96	14	118	10.15
Albemarle	200	691	42	962	10.01
Spotsylvania	21	547	104	723	9.86
Culpeper	<10	225	60	317	9.84
Lee	<10	72	<10	81	9.83
Buchanan	<10	97	<10	111	9.67
Floyd	<10	47	<10	62	9.63
Buckingham	<10	43	<10	48	9.62
Hampton City	34	843	82	973	9.54

County*	Renewable Generation Jobs	Energy Efficiency Jobs	Clean Vehicle Jobs	Total Clean Energy Jobs†	Clean Energy Job Density‡,§
King William	<10	59	11	73	9.53
James City	41	450	32	535	9.51
Mathews	<10	20	<10	25	9.44
Wythe	<10	93	111	210	9.28
Page	11	78	<10	99	9.27
Salem City	37	273	33	348	9.18
Falls Church City	12	171	26	213	9.15
Halifax	14	170	16	208	8.96
Shenandoah	16	159	38	235	8.91
Alleghany	<10	51	<10	61	8.83
Carroll	10	76	14	104	8.80
Lunenburg	<10	33	<10	40	8.77
Essex	<10	24	30	60	8.74
Rockingham	19	479	74	597	8.74
Northampton	<10	23	<10	71	8.73
Stafford	23	649	125	809	8.72
Mecklenburg	<10	154	21	193	8.62
Caroline	<10	71	15	93	8.51
Goochland	<10	269	<10	329	8.51
Frederick	16	494	69	605	8.42
Orange	<10	113	21	162	8.42
Petersburg City	23	164	17	209	8.40
Norfolk City	85	2,037	132	2,303	8.40
Middlesex	<10	46	<10	53	8.40
Norton City	<10	47	<10	53	8.40
Roanoke	81	454	85	631	8.30
Tazewell	<10	189	21	221	7.94
Portsmouth City	26	593	59	689	7.93
Colonial Heights City	<10	122	22	152	7.88
Gloucester	<10	129	13	151	7.82
Dickenson	<10	42	<10	52	7.73
Richmond	<10	35	<10	42	7.67
Wise	10	141	12	170	7.44
Martinsville City	77	52	<10	136	7.31
Newport News City	70	1,192	161	1,459	7.22
Henry	15	175	25	222	7.07
Fredericksburg City	11	269	38	322	7.00
Staunton City	26	106	11	148	6.69
Dinwiddie	<10	100	14	120	6.59
Prince George	<10	152	21	187	6.55
Suffolk City	13	377	48	453	6.51
Patrick	<10	36	<10	49	6.43
Waynesboro City	<10	86	14	117	6.42
Isle of Wight	<10	103	21	135	6.38
Bristol City	12	92	12	121	6.23
Prince Edward	<10	84	14	103	5.86
Southampton	<10	31	<10	40	5.69
Warren	<10	111	19	139	5.15
Greensville	<10	31	10	44	5.08
Sussex	<10	22	<10	31	5.04
Danville City	31	165	42	246	5.02

County*	Renewable Generation Jobs	Energy Efficiency Jobs	Clean Vehicle Jobs	Total Clean Energy Jobs†	Clean Energy Job Density‡,5
Winchester City	<10	204	30	246	4.94
Charlotte	<10	18	<10	24	4.68
Grayson	<10	13	<10	30	4.48
Hopewell City	<10	52	<10	64	4.37
Scott	<10	36	<10	42	4.36
Lexington City	<10	30	<10	34	3.97
Emporia City	<10	20	<10	26	3.90
Nottoway	<10	32	<10	42	3.86
Galax City	<10	28	<10	41	3.74
Franklin City	<10	15	<10	25	3.22
Williamsburg City	<10	49	<10	59	2.93

* Virginia is divided into 95 counties, along with 38 independent cities that are considered county-equivalents for census purposes.

† Total includes jobs across all clean energy sectors, including clean fuels, clean vehicles, and storage and grid modernization.

‡ Job density is measured as the number of workers employed per 1,000 county-level jobs.

Note: About 2,500 clean energy jobs are in an unknown or undefined county.

Table 2// VIRGINIA CLEAN ENERGY EMPLOYMENT by metro 2021

Metro	Renewable Generation Jobs	Energy Efficiency Jobs	Clean Vehicle Jobs	Total Clean Energy Jobs*
Washington-Arlington-Alexandria	3,688	32,747	1,622	39,057
Richmond	1,698	11,564	923	14,701
Virginia Beach-Norfolk-Newport News	699	12,213	1,183	14,430
Rural/Nonmetropolitan Areas	1,657	6,579	944	9,675
Roanoke	377	2,568	440	3,556
Charlottesville	823	1,768	94	2,783
Lynchburg	406	1,987	182	2,643
Blacksburg-Christiansburg-Radford	45	1,086	766	1,949
Harrisonburg	44	1,074	250	1,403
Winchester	24	698	100	851
Danville	45	398	172	635
Kingsport-Bristol-Bristol	23	438	156	631

* Total includes jobs across all clean energy sectors, including clean fuels, clean vehicles, and storage and grid modernization.

1 Unless otherwise stated, all data is from the 2022 U.S. Energy and Employment Report (USEER), June 2022, Department of Energy (DOE). All employment findings in USEER is based on survey and data analysis collected from Q4 2021. See Pages 201-206 for methodology questions.

2 Based on the 2019 U.S. Energy and Employment Report individual state snapshot for California, available at <http://usenergyjobs.org>.

3 U.S. Census Bureau. Available at <https://www.census.gov/quickfacts/VA>.

4 Employment density based on county employment from the Quarterly Census of Employment and Wages, Fourth Quarter 2021. Available at https://data.bls.gov/cew/apps/data_views/data_views.htm#tab=Tables.

5 United States Bureau of Labor Statistics (BLS) 2021 Q4 employment, all ownerships (accessed October 2021).



About E2

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.

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