Renewable Energy Question #33: How does Michigan's renewable capacity compare with other states as a percentage of total electric load?

Michigan ranks in the bottom 1/3 of U.S. states in terms of renewable capacity as a percentage of total capacity in the state. Likewise, Michigan is in the bottom third in terms of renewable electricity generation as a percent of total generation in the state.

There are several ways to make these comparisons. Capacity is the maximum electric output a generator can produce, which is a direct measure of renewable electricity infrastructure. In 2012, Michigan had approximately 2,000 MW of hydroelectric electricity capacity, and approximately 1,500 MW of other renewable capacity, mostly wind and biomass. This adds up to 11% of total available capacity in the state.

An RPS is measuring and tracking the energy produced from the capacity that is installed. Most of the time, both customers and generators operate at well below peak capacity.[1] Hence, it is instructive to consider renewable generation as a percent of total state generation, which is the actual amount of electricity that is produced over a certain time period. Renewable energy comparisons measure how renewable energy contributes to meeting total electric load and how well renewables have been incorporated into the grid.

Capacity (2012) (Source: SNL database):

State	Hydroelectric (MW)	Other Renewables (MW)	Total Renewables (MW)	Total State Capacity (MW)	Renewables as Percent of Total Capacity
WA	23,323	2,906	26,229	33,284	79%
HI	25	1,982	2,007	2,691	75%
OR	6,626	3,173	9,798	14,074	70%
ID	2,769	629	3,398	5,172	66%
SD	1,598	1,022	2,620	4,316	61%
MT	2,741	651	3,392	6,357	53%
ME	758	1,368	2,126	4,802	44%
AK	436	606	1,042	2,402	43%
VT	335	152	487	1,315	37%
IA	139	5,806	5,946	16,570	36%
ND	508	1,799	2,307	6,508	35%
CA	14,119	7,553	21,672	71,044	31%

[1] The electric energy consumed in Michigan in 2012 was nearly the same as the electric energy produced for the year. (Consumption in 2012 was 104,079 GWH in Michigan, and production was 108,726 GWH.)

CT	160	2,622	2,782	9,656	29%
NY	5,769	5,597	11,366	41,743	27%
VA	4,160	2,657	6,817	25,877	26%
CO	1,229	2,843	4,072	15,614	26%
NH	509	682	1,192	4,570	26%
MN	219	3,495	3,714	16,517	22%
WY	308	1,543	1,851	8,490	22%
KS	8	3,023	3,030	14,286	21%
MA	1,993	918	2,911	14,873	20%
TN	4,188	79	4,267	22,354	19%
OK	1,114	3,343	4,457	23,546	19%
SC	4,055	509	4,564	24,477	19%
NV	1,052	493	1,546	11,117	14%
AZ	2,937	1,023	3,960	28,578	14%
PA	2,247	4,101	6,348	46,744	14%
MD	590	1,081	1,671	12,737	13%
GA	3,822	1,370	5,192	40,330	13%
MO	1,170	1,648	2,819	22,607	12%
NE	278	722	1,000	8,042	12%
TX	582	12,860	13,442	109,697	12%
NM	85	944	1,029	8,522	12%
MI	2,152	1,485	3,637	32,484	11%
FL	55	6,466	6,521	61,766	11%
AL	3,244	100	3,343	33,678	10%
UT	281	480	761	7,690	10%
NC	2,236	523	2,760	31,244	9%
IL	34	4,093	4,127	47,594	9%
IN	61	2,329	2,390	28,089	9%

AR	1,365	17	1,382	16,797	8%
NJ	406	1,055	1,460	19,921	7%
WI	497	790	1,287	19,877	6%
WV	346	598	944	16,969	6%
KY	820	79	899	22,224	4%
LA	273	788	1,061	27,704	4%
OH	108	1,252	1,360	35,938	4%
DE		73	73	2,992	2%
RI	3	12	15	2,028	1%
MS		49	49	16,135	0%

Generation (2012) (Source: Energy Information Administration):

State	Hydroelectric (GWh)	Other Renewables (GWh)	Total Renewables (GWh)	Total State Generation (GWh)	Renewables as Percent of Total Generation
Idaho	11,750	2,408	14,158	16,176	88%
Washington	88,533	8,212	96,745	115,974	83%
Oregon	39,257	6,801	46,058	60,372	76%
South Dakota	5,964	2,914	8,878	12,168	73%
Maine	3,527	4,795	8,322	15,049	55%
Montana	11,304	1,281	12,585	27,726	45%
California	25,960	31,009	56,969	201,341	28%
Iowa	821	14,107	14,928	56,919	26%
Vermont	1,195	516	1,711	6,708	26%
New York	25,058	5,181	30,239	136,966	22%
North Dakota	2,477	5,323	7,800	36,179	22%
Alaska	1,434	17	1,451	6,979	21%
Minnesota	738	9,261	9,999	52,560	19%

Nevada	2,439	3,321	5,760	35,566	16%
Colorado	2,004	6,278	8,282	53,594	15%
New Hampshire	1,294	1,383	2,677	19,270	14%
Kansas	0	5,179	5,179	44,782	12%
Oklahoma	1,136	8,531	9,667	78,267	12%
Tennessee	8,012	1,058	9,070	77,449	12%
United States	276,535	218,787	495,322	4,054,485	12%
Wyoming	895	4,394	5,289	49,811	11%
Hawaii	90	920	1,010	10,075	10%
Nebraska	1,507	1,342	2,849	34,645	8%
New Mexico	201	2,575	2,776	36,574	8%
Texas	512	33,695	34,207	431,017	8%
Wisconsin	2,020	3,233	5,253	64,484	8%
Alabama	7,157	3,258	10,415	152,664	7%
Arizona	6,729	1,358	8,087	110,694	7%
Maryland	1,664	882	2,546	37,815	7%
Arkansas	2,168	1,684	3,852	65,382	6%
Massachusetts	969	1,322	2,291	35,397	6%
Utah	1,138	1,113	2,251	39,649	6%
Georgia	2,331	3,357	5,688	122,704	5%
North Carolina	3,517	2,393	5,910	116,024	5%
Virginia	1,007	2,255	3,262	70,895	5%
Illinois	98	8,413	8,511	197,738	4%
Michigan	1,305	3,556	4,861	108,726	4%
South Carolina	1,396	2,049	3,445	96,510	4%
West Virginia	1,327	1,286	2,613	73,326	4%

Connecticut	472	688	1,160	35,733	3%
Indiana	456	3,511	3,967	114,680	3%
Kentucky	2,376	330	2,706	89,819	3%
Louisiana	680	2,240	2,920	103,770	3%
Mississippi	0	1,414	1,414	54,193	3%
Pennsylvania	2,313	4,674	6,987	224,714	3%
Delaware	0	142	142	8,808	2%
Florida	154	4,699	4,853	220,751	2%
Missouri	721	1,307	2,028	91,985	2%
New Jersey	0	1,284	1,284	64,092	2%
Ohio	381	1,710	2,091	129,307	2%
Rhode Island	0	129	129	8,370	2%

Resources:

1) U.S. Energy Information Administration. 2013. *Electric Power Monthly: Net Generation for All Sectors*. Available at:
http://www.eia.gov/electricity/data/browser/#/topic/0?agg=2,0,1&fuel=vvvo&geo=g0fvvvvvvvvvo&sec=g&linechart=ELEC.GEN.ALL-US-99.A&columnchart=ELEC.GEN.ALL-US-99.A&map=ELEC.GEN.ALL-US-99.A&freq=A&ctype=linechart&ltype=pin&pin=&rse=0&maptype=0