

## Calculating the Total Demand for Renewable Energy in the PJM and MISO Footprints

In order to estimate the demand for renewable energy in PJM and MISO, we first researched the statutory renewable energy requirements for states in the PJM and MISO footprints. The state-by-state annual renewables percentage requirements as a percentage of total state electricity sales are shown below. We used 2010 Energy Information Agency (EIA) data on the split of electric sales between investor-owned utilities, cooperatives, etc. to determine how much of future load will be subject to RPS requirements.

RPS requirement											
%											
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
DC	12.00%	13.50%	15.00%	16.50%	18.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%
Delaware	13.00%	14.50%	16.00%	17.50%	19.00%	20.00%	21.00%	22.00%	23.00%	24.00%	25.00%
Illinois	9.09%	10.45%	11.82%	13.18%	14.54%	15.91%	17.27%	18.63%	20.00%	21.36%	22.72%
Iowa	0.58%	0.57%	0.56%	0.56%	0.56%	0.56%	0.55%	0.55%	0.54%	0.54%	0.54%
Indiana	3.22%	3.22%	3.22%	3.22%	5.63%	5.63%	5.63%	5.63%	5.63%	5.63%	8.05%
Kentucky	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Maryland	13.00%	15.20%	15.60%	18.30%	17.40%	18.00%	18.70%	20.00%	20.00%	20.00%	20.00%
Michigan	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%
Minnesota	14.80%	20.74%	20.74%	20.74%	20.74%	24.67%	24.67%	24.67%	24.67%	24.67%	27.33%
Missouri	3.48%	3.48%	3.48%	6.96%	6.96%	6.96%	10.44%	10.44%	10.44%	10.44%	10.44%
Montana	10.19%	10.19%	10.19%	10.19%	10.19%	10.19%	10.19%	10.19%	10.19%	10.19%	10.19%
New Jersey	13.67%	14.76%	16.89%	19.06%	21.30%	23.60%	24.11%	24.71%	25.38%	26.12%	26.97%
North Carolina	6.00%	6.00%	6.00%	10.00%	10.00%	10.00%	12.50%	12.50%	12.50%	12.50%	12.50%
North Dakota	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%
Ohio	3.10%	3.98%	4.86%	5.75%	6.63%	7.52%	8.40%	9.29%	10.17%	11.05%	11.05%
Pennsylvania	13.31%	13.80%	14.28%	14.77%	15.26%	17.49%	17.49%	17.49%	17.49%	17.49%	17.49%
South Dakota	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%
Tennessee	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Virginia	3.37%	5.89%	5.89%	5.89%	5.89%	5.89%	5.89%	10.10%	10.10%	10.10%	12.62%
West Virginia	9.94%	9.94%	9.94%	9.94%	9.94%	14.91%	14.91%	14.91%	14.91%	14.91%	24.85%
Wisconsin	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%

Next, we compiled the projected electric load for each state from the Energy Information Agency's (EIA). These RPS-eligible load projections are shown below.

Total load											
GWh											
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
DC	11,355	11,464	11,585	11,672	11,719	11,727	11,788	11,882	11,977	12,046	12,093
Delaware	11,617	11,729	11,852	11,942	11,990	11,998	12,060	12,156	12,254	12,324	12,372
Illinois	146,513	148,200	149,858	151,130	151,830	152,145	152,960	154,060	155,147	156,133	157,162
Iowa	47,913	48,598	49,074	49,269	49,390	49,689	50,093	50,481	50,800	51,115	51,407
Indiana	107,617	109,289	110,850	111,936	112,382	112,658	113,338	114,261	115,146	115,872	116,592
Kentucky	94,224	96,249	98,156	99,632	100,697	101,534	102,600	103,754	104,950	106,076	107,084
Maryland	62,341	62,940	63,602	64,083	64,342	64,385	64,719	65,233	65,758	66,135	66,391
Michigan	106,164	107,375	108,541	109,393	109,707	109,830	110,368	111,176	111,949	112,611	113,250
Minnesota	71,268	72,286	72,994	73,285	73,465	73,908	74,510	75,087	75,561	76,030	76,464
Missouri	85,726	86,685	87,421	87,826	88,008	88,479	89,116	89,744	90,315	90,910	91,472
Montana	14,413	14,742	14,984	15,162	15,279	15,459	15,657	15,861	16,056	16,221	16,385
New Jersey	75,693	76,420	77,224	77,808	78,122	78,175	78,580	79,205	79,841	80,299	80,610
North Carolina	131,698	133,755	135,944	137,715	139,148	140,185	141,697	143,437	145,213	146,910	148,435
North Dakota	15,427	15,647	15,800	15,863	15,902	15,998	16,129	16,254	16,356	16,458	16,552
Ohio	156,000	158,424	160,686	162,261	162,907	163,307	164,293	165,631	166,914	167,966	169,010
Pennsylvania	145,943	147,346	148,896	150,022	150,627	150,729	151,510	152,715	153,942	154,825	155,424
South Dakota	12,300	12,476	12,598	12,648	12,679	12,756	12,859	12,959	13,041	13,122	13,197
Tennessee	101,983	104,175	106,239	107,836	108,989	109,896	111,049	112,299	113,592	114,811	115,903
Virginia	74,380	74,380	74,380	74,380	74,380	74,380	74,380	74,380	74,380	74,380	74,380
West Virginia	31,533	32,023	32,480	32,799	32,929	33,010	33,209	33,480	33,739	33,952	34,163
Wisconsin	72,709	73,772	74,562	74,984	75,325	75,839	76,442	77,032	77,546	78,129	78,639

Next, we multiplied the renewable energy percentage requirement by the total eligible load for a given state in a given year to form the table below. We summed the renewable generation requirements to determine the total demand in PJM and in MISO.

<b>Renewables requirement</b>											
<b>GWh</b>											
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
DC	1,363	1,548	1,738	1,926	2,109	2,345	2,358	2,376	2,395	2,409	2,419
Delaware	1,510	1,701	1,896	2,090	2,278	2,400	2,533	2,674	2,818	2,958	3,093
Illinois	13,317	15,490	17,707	19,918	22,080	24,200	26,415	28,705	31,023	33,349	35,711
Iowa	276	276	276	276	276	276	276	276	276	276	276
Indiana	3,463	3,517	3,567	3,602	6,329	6,344	6,383	6,435	6,484	6,525	9,380
Kentucky	0	0	0	0	0	0	0	0	0	0	0
Maryland	8,104	9,567	9,922	11,727	11,195	11,589	12,102	13,047	13,152	13,227	13,278
Michigan	10,616	10,737	10,854	10,939	10,971	10,983	11,037	11,118	11,195	11,261	11,325
Minnesota	10,549	14,989	15,136	15,196	15,234	18,233	18,382	18,524	18,641	18,757	20,901
Missouri	2,983	3,017	3,042	6,113	6,125	6,158	9,304	9,369	9,429	9,491	9,550
Montana	1,468	1,501	1,526	1,544	1,556	1,575	1,595	1,615	1,635	1,652	1,669
New Jersey	10,346	11,280	13,039	14,832	16,639	18,450	18,943	19,575	20,261	20,975	21,744
North Carolina	7,902	8,025	8,157	13,771	13,915	14,018	17,712	17,930	18,152	18,364	18,554
North Dakota	1,543	1,565	1,580	1,586	1,590	1,600	1,613	1,625	1,636	1,646	1,655
Ohio	4,828	6,304	7,815	9,327	10,804	12,275	13,802	15,379	16,974	18,567	18,682
Pennsylvania	19,428	20,331	21,268	22,158	22,979	26,363	26,500	26,711	26,925	27,080	27,185
South Dakota	1,230	1,248	1,260	1,265	1,268	1,276	1,286	1,296	1,304	1,312	1,320
Tennessee	0	0	0	0	0	0	0	0	0	0	0
Virginia	2,503	4,380	4,380	4,380	4,380	4,380	4,380	7,509	7,509	7,509	9,386
West Virginia	3,134	3,183	3,228	3,260	3,273	4,921	4,951	4,991	5,030	5,062	8,489
Wisconsin	7,271	7,377	7,456	7,498	7,533	7,584	7,644	7,703	7,755	7,813	7,864
<b>Total</b>	<b>111,835</b>	<b>126,036</b>	<b>133,849</b>	<b>151,409</b>	<b>160,535</b>	<b>174,971</b>	<b>187,214</b>	<b>196,859</b>	<b>202,594</b>	<b>208,231</b>	<b>222,481</b>