

Monthly Distribution of Residential Wood Combustion Emissions

Prepared for:
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OMNI Environmental Services, Inc. (OMNI) suggests that for emission inventory purposes air emissions from residential wood combustion (RWC) be assigned to each month of the year by proportioning the emissions by the relative monthly heating demand. Heating degree-day (HDD) is a well-established and accepted way to quantify heating demand. This suggested method of assigning emissions would be significantly more accurate than assigning an equal amount to each month of the year ($1/12^{\text{th}}$ of the total to each month), which does not accurately represent temporal RWC impacts on air quality. Shorter time intervals (weekly or even daily) data could also be used as the data is generally tabulated daily.

This method of assigning emissions could easily be done on a national, state, regional, or even local level. In most cases, though, using the national average is a reasonable simplification, as on a percentage basis there is only a small difference between most locations in the U.S.. Figure 1 shows the national average HDD (population weighted) for each month as a percent of the annual total. These data, and all the HDD data presented here, are the averages for 30 years (1971-2000) and compiled by the National Climatic Data Center in Asheville, NC. Figure 2 shows the same data but on a HDD basis.

Figures 3 and 4 show the data for the national average and for each of the 9 U.S. Census Bureau Census Divisions. Tables 1 and 2 summarize the data that generated the figures on a HDD basis and a percentage basis, respectively. The data confirms that using the national data for assigning emissions is a reasonable simplification. There are a few divisions that do not follow the national average as well as others, for example, in the Pacific Census Region the winters are milder and the spring and early summers cooler than the national average and in the West South Central region the winters are colder but the springs and summers are much warmer than the national average (on a relative basis). Though these divisions do not follow the national trends as well as the rest of the divisions do, the differences are only a few percentage points.

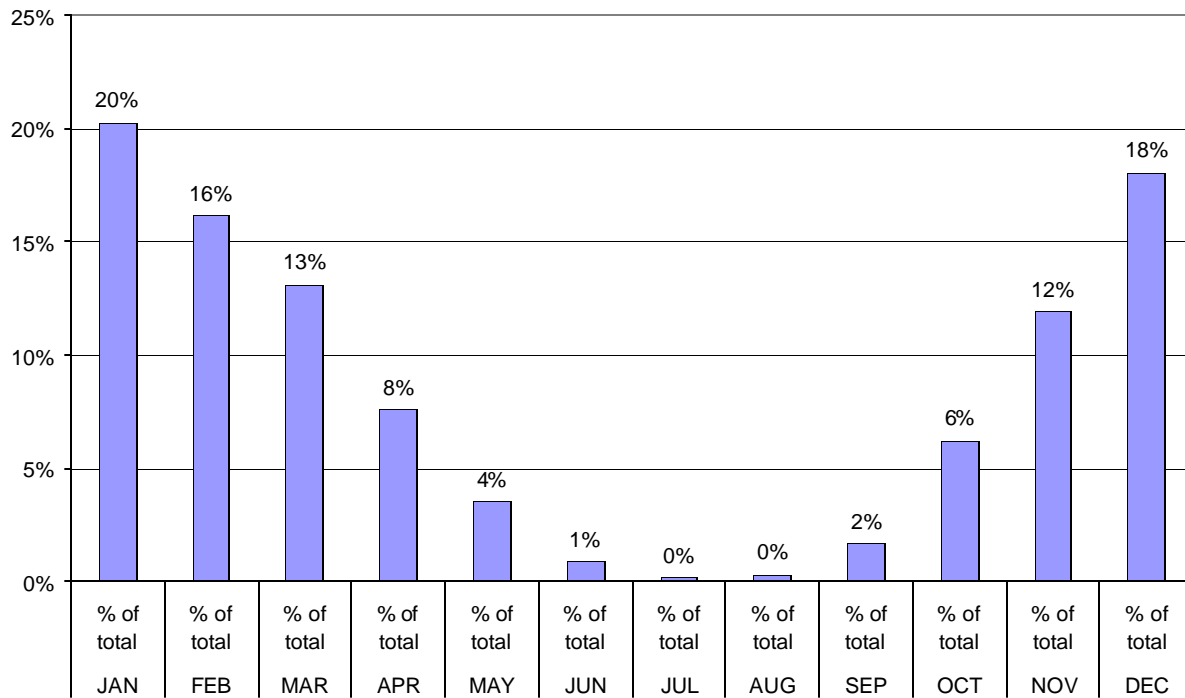


Figure 1: National HDD in Percent of Yearly Average (1971-2000)

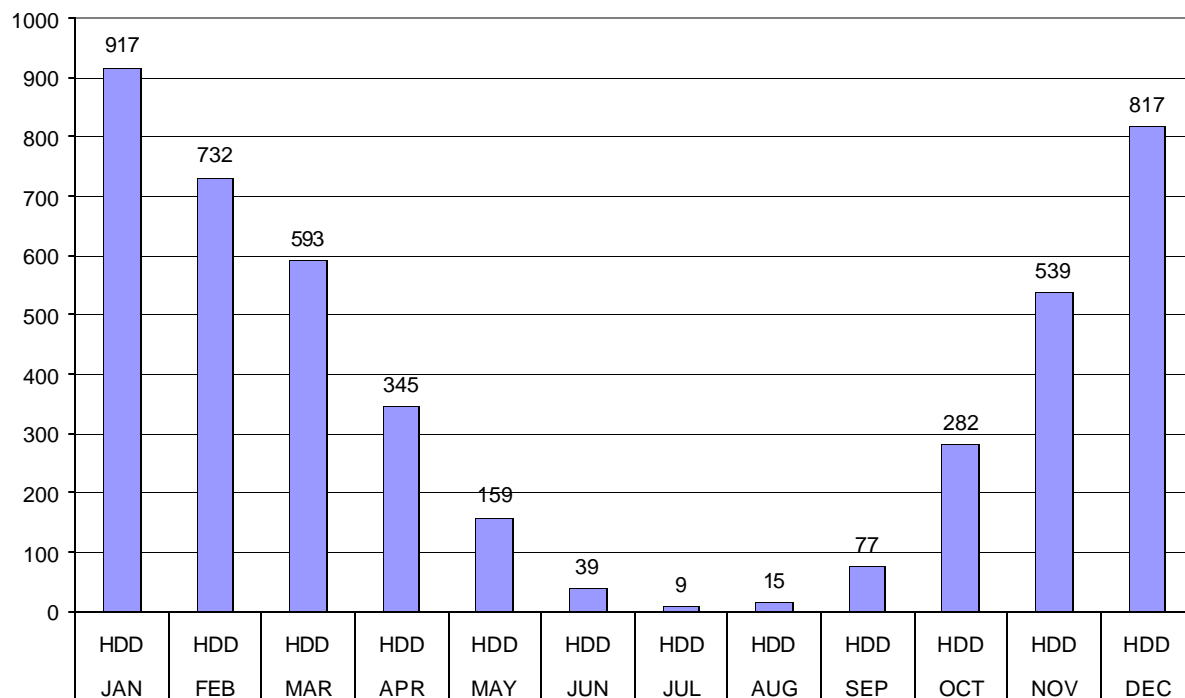


Figure 2: Average National HDD (1971-2000)

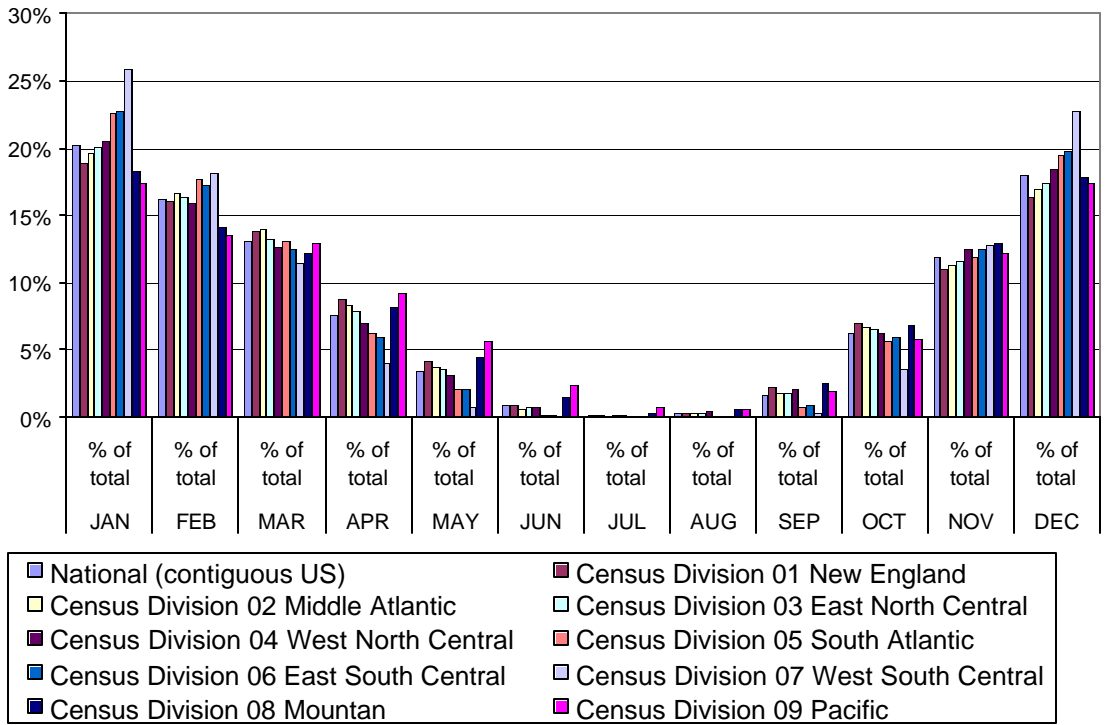


Figure 3: National and Regional HDD in Percent of Yearly Average (1971-2000)

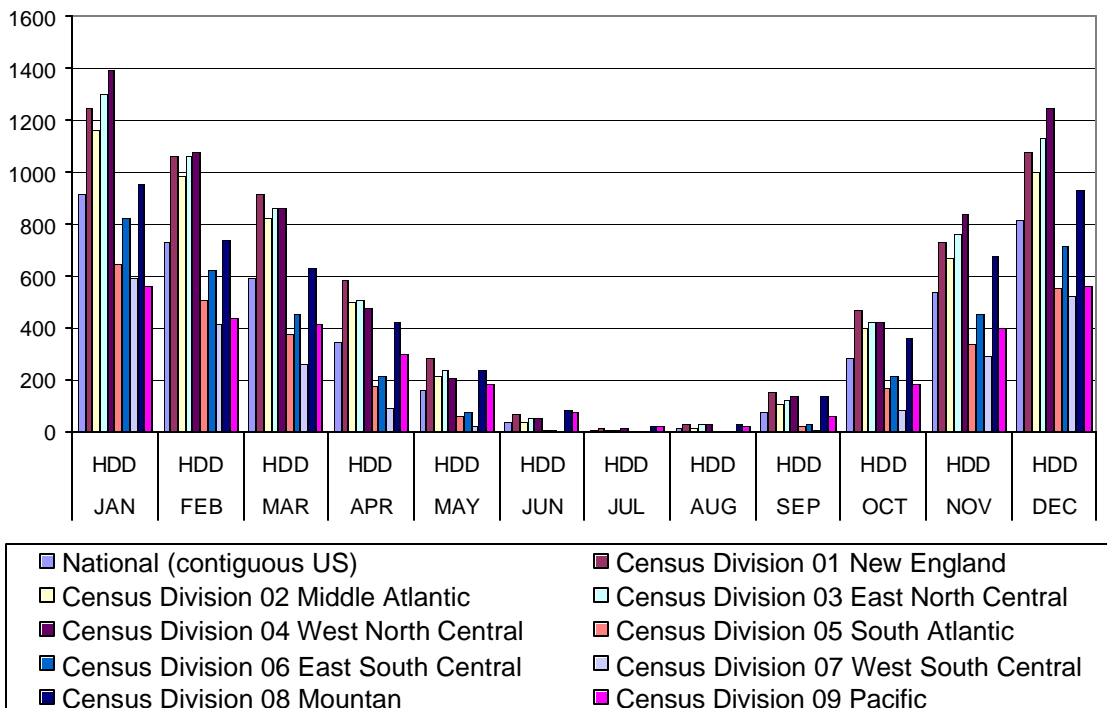


Figure 4: Average National and Regional HDD (1971-2000)

Table 1
National and Regional HDD Data (Population Weighted Mean, 1971-2000)

	Annual	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
National Average	4524	917	732	593	345	159	39	9	15	77	282	539	817
New England Division 01	6612	1246	1060	913	583	281	66	11	26	153	467	727	1078
Middle Atlantic Division 02	5910	1158	983	827	496	217	39	6	16	105	399	667	998
East North Central Division 03	6498	1302	1061	864	510	238	50	9	26	121	424	757	1135
West North Central Division 04	6750	1390	1078	858	472	208	49	15	29	139	424	840	1248
South Atlantic Division 05	2853	643	507	373	179	61	7	0	1	24	164	339	555
East South Central Division 06	3603	820	623	452	216	76	7	0	1	32	213	449	715
West South Central Division 07	2286	593	414	263	94	17	1	0	0	9	83	293	520
Mountain Division 08	5209	951	737	633	426	233	82	19	30	134	360	676	928
Pacific Division 09	3226	564	439	416	298	182	76	24	22	62	186	396	563

Table 2
National and Regional HDD Data, Percentage of Total (Population Weighted Mean, 1971-2000)

	Annual	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
National Average	4524	20%	16%	13%	8%	4%	1%	0%	0%	2%	6%	12%	18%
New England Division 01	6612	19%	16%	14%	9%	4%	1%	0%	0%	2%	7%	11%	16%
Middle Atlantic Division 02	5910	20%	17%	14%	8%	4%	1%	0%	0%	2%	7%	11%	17%
East North Central Division 03	6498	20%	16%	13%	8%	4%	1%	0%	0%	2%	7%	12%	17%
West North Central Division 04	6750	21%	16%	13%	7%	3%	1%	0%	0%	2%	6%	12%	18%
South Atlantic Division 05	2853	23%	18%	13%	6%	2%	0%	0%	0%	1%	6%	12%	19%
East South Central Division 06	3603	23%	17%	13%	6%	2%	0%	0%	0%	1%	6%	12%	20%
West South Central Division 07	2286	26%	18%	12%	4%	1%	0%	0%	0%	0%	4%	13%	23%
Mountain Division 08	5209	18%	14%	12%	8%	4%	2%	0%	1%	3%	7%	13%	18%
Pacific Division 09	3226	17%	14%	13%	9%	6%	2%	1%	1%	2%	6%	12%	17%