# APPENDIX G

## DEVELOPMENT OF TEMPORAL ACTIVITY PROFILES

Temporal adjustments are used to modify emission estimates to reflect the time period of interest. Adjustments may need to be made to reflect differences in the usage level for a season, a certain day of the week, or time of day. Day-of-week and time-of-day adjustment factors based on the study results are presented in this Appendix.

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## G-1. WD-WE TEMPORAL ADJUSTMENT FACTORS

The EPA methodology for estimating emissions for a specific day relative to an average day is as follows:

$$\text{Emission}_{Day} = \text{Emissions}_{AveDay} * (\text{Weight Factor}_{Day} / \text{Weight Factor}_{Total}) / 7 \qquad \textbf{(G-1)}$$

Based on this EPA equation, the WD-WE factors (weight factor) to apply for the sources surveyed in this study are shown in **Table G-1**. Note EPA recommends the totals sum to 1000.

Table G-1. Weekly profile of business, residential, mobile, and point source temporal adjustment factors.

| SOURCE CATEGORY | DESCRIPTION | MON-TH | FRI | SAT | SUN | TOTAL |
|---|---|---|---|---|---|---|
| Business | Engine Oils | 182 | 182 | 50 | 40 | 1000 |
| Business | Gas Ovens | 176 | 176 | 88 | 29 | 997 |
| Business | IC Engines | 182 | 182 | 50 | 40 | 1000 |
| Business | L&G Equipment[a] | 188 | 188 | 41 | 20 | 1001 |
| Business | Solvents | 190 | 190 | 40 | 10 | 1000 |
| Residential | Barbeques | 105 | 100 | 250 | 230 | 1000 |
| Residential | Consumer Products | 144 | 168 | 139 | 119 | 1002 |
| Residential | Engine Oils | 148 | 99 | 198 | 109 | 998 |
| Residential | Fireplace | 132 | 70 | 230 | 170 | 998 |
| Residential | L&G Equipment* | 120 | 204 | 204 | 112 | 1000 |
| Residential | Paints & Solvents | 145 | 130 | 160 | 130 | 1000 |
| Residential | Paving | 144 | 99 | 188 | 139 | 1002 |
| Residential | Pesticides & Fertilizer | 100 | 220 | 160 | 220 | 1000 |
| Residential | Pouring D/G[b] | 119 | 168 | 188 | 168 | 1000 |
| Mobile | Passenger | 150 | 150 | 130 | 120 | 1000 |
| Mobile | MD Trucks | 170 | 180 | 80 | 60 | 1000 |
| Mobile | HD Trucks | 180 | 150 | 70 | 50 | 990 |
| Mobile | Bus | 170 | 150 | 100 | 70 | 1000 |
| Point | Point | 152 | 141 | 126 | 124 | 999 |

[a] L&G – Lawn and Garden
[b] D/G – Diesel or Gasoline from a can

## G-2. DIURNAL PROFILE ADJUSTMENT FACTORS

The EPA methodology for estimating emissions for a specific hour relative to an average day is as follows:

$$\text{Emission}_{Hr} = \text{Emissions}_{Day} * (\text{Weight Factor}_{Hr} / \text{Weight Factor}_{Total}) \qquad \textbf{(G-2)}$$

Based on this EPA equation, the diurnal factors (weight factor) to apply for business sources of interest appear in **Table G-2**, for the residential sources of interest in **Table G-3**, and for on-road motor vehicles in **Table G-4**. Note EPA recommends that totals sum to 10,000. These diurnal profiles are based solely on the activity levels resulting from the surveys of this study.

Table G-2. Diurnal profile for businesses activities.

| SOURCE CATEGORY | DESCRIP-TION | WD-WE | 1,2, 3,4, | 5,6, 7,8 | 9,10, 11,12 | 13,14, 15,16 | 17,18, 19,20 | 21,22, 23,24 | TOTAL |
|---|---|---|---|---|---|---|---|---|---|
| Business | Engine Oils | M-F | 75 | 575 | 825 | 700 | 225 | 100 | 10,000 |
| | | Sat | 275 | 350 | 650 | 525 | 375 | 300 | 9,900 |
| | | Sun | 325 | 425 | 425 | 425 | 475 | 400 | 9,900 |
| Business | Gas Ovens | M-F | 75 | 75 | 675 | 700 | 500 | 475 | 10,000 |
| | | Sat | 150 | 150 | 875 | 850 | 275 | 225 | 10,000 |
| | | Sun | 300 | 325 | 525 | 500 | 450 | 400 | 10,000 |
| Business | IC Engines | M-F | 75 | 575 | 825 | 700 | 225 | 100 | 10,000 |
| | | Sat | 275 | 350 | 650 | 525 | 375 | 300 | 9,900 |
| | | Sun | 325 | 425 | 425 | 425 | 475 | 400 | 9,900 |
| Business | Lawn & Garden Equipment | M-F | 27 | 622 | 901 | 834 | 89 | 27 | 10,000 |
| | | Sat | 24 | 536 | 1079 | 818 | 35 | 8 | 10,000 |
| | | Sun | 4 | 889 | 905 | 640 | 54 | 8 | 10,000 |
| Business | Solvents | M-F | 150 | 350 | 700 | 700 | 325 | 275 | 10,000 |
| | | Sat | 125 | 175 | 1025 | 800 | 225 | 150 | 10,000 |
| | | Sun | 300 | 400 | 450 | 475 | 475 | 400 | 10,000 |

As a convention, hour 1 refers to the first hour of the day (midnight to 1 a.m.) local time, hour 2 refers to the second hour of the day (1 a.m. to 2 a.m.), etc.

Table G-3. Diurnal profile for residences.

| SOURCE CATEGORY | DESCRIPTION | WD-WE | 5,6,7,8,9, 10,11,12 | 13,14,15, 16,17 | 18,19, 20,21 | TOTAL |
|---|---|---|---|---|---|---|
| Residential | Barbecues | M-Th | 119 | 195 | 2019 | 10,003 |
| | | F | 0 | 240 | 2200 | 10,000 |
| | | Sat | 88 | 780 | 1350 | 10,004 |
| | | Sun | 88 | 960 | 1125 | 10,004 |
| Residential | Consumer Products | M-Th | 900 | 250 | 388 | 10,002 |
| | | F | 825 | 300 | 475 | 10,000 |
| | | Sat | 850 | 360 | 375 | 10,100 |
| | | Sun | 888 | 300 | 350 | 10,040 |
| Residential | Engine Oils | M-Th | 391 | 830 | 675 | 9,978 |
| | | F | 500 | 800 | 500 | 10,000 |
| | | Sat | 625 | 780 | 275 | 10,000 |
| | | Sun | 413 | 880 | 550 | 9,904 |
| Residential | Fireplace | M-Th | 728 | 415 | 519 | 9,975 |
| | | F | 838 | 660 | 0 | 10,004 |
| | | Sat | 312 | 260 | 1,575 | 10,096 |
| | | Sun | 500 | 400 | 1,000 | 10,000 |
| Residential | Lawn & Garden Equipment | M-Th | 659 | 825 | 156 | 10,021 |
| | | F | 500 | 1,140 | 75 | 10,000 |
| | | Sat | 550 | 820 | 375 | 10,000 |
| | | Sun | 625 | 660 | 425 | 10,000 |
| Residential | Paints & Solvents | M-Th | 572 | 850 | 300 | 10,026 |
| | | F | 400 | 940 | 525 | 10,000 |
| | | Sat | 375 | 1,140 | 325 | 10,000 |
| | | Sun | 450 | 1,180 | 125 | 10,000 |
| Residential | Paving | M-Th | 938 | 250 | 312 | 10,002 |
| | | F | 1250 | 0 | 0 | 10,000 |
| | | Sat | 625 | 500 | 625 | 10,000 |
| | | Sun | 412 | 1340 | 0 | 9,996 |
| Residential | Pesticides & Fertilizer | M-Th | 354 | 365 | 1331 | 9,981 |
| | | F | 500 | 260 | 1175 | 10,000 |
| | | Sat | 563 | 360 | 900 | 9,904 |
| | | Sun | 750 | 800 | 0 | 10,000 |
| Residential | Pouring Diesel or Gasoline from a can | M-Th | 281 | 350 | 1500 | 9,998 |
| | | F | 975 | 440 | 0 | 10,000 |
| | | Sat | 838 | 220 | 550 | 10,004 |
| | | Sun | 625 | 500 | 625 | 10,000 |

Table G-4. Diurnal profile for on-road motor vehicles.

| HOUR | M-TH | F | SAT | SUN |
|---|---|---|---|---|
| 1 | 107 | 96 | 139 | 154 |
| 2 | 70 | 91 | 91 | 114 |
| 3 | 52 | 67 | 85 | 92 |
| 4 | 58 | 53 | 70 | 82 |
| 5 | 91 | 79 | 72 | 83 |
| 6 | 173 | 179 | 142 | 145 |
| 7 | 328 | 334 | 257 | 272 |
| 8 | 493 | 462 | 348 | 385 |
| 9 | 543 | 491 | 419 | 413 |
| 10 | 488 | 424 | 554 | 462 |
| 11 | 477 | 430 | 657 | 534 |
| 12 | 481 | 476 | 653 | 538 |
| 13 | 492 | 502 | 586 | 576 |
| 14 | 547 | 557 | 551 | 638 |
| 15 | 621 | 651 | 625 | 655 |
| 16 | 649 | 703 | 688 | 702 |
| 17 | 688 | 766 | 734 | 787 |
| 18 | 750 | 796 | 776 | 768 |
| 19 | 742 | 710 | 711 | 684 |
| 20 | 669 | 625 | 549 | 602 |
| 21 | 571 | 535 | 450 | 513 |
| 22 | 450 | 423 | 367 | 404 |
| 23 | 287 | 311 | 281 | 267 |
| 24 | 178 | 224 | 200 | 143 |