

**TABLE 1 SUMMARY 2008 MASSACHUSETTS STATEWIDE EMISSIONS**  
**VOC, NOx, CO, SO2, NH3, PM10 AND PM2.5**

TONS PER YEAR (TPY), SUMMER DAY (TPSD), WINTER DAY (TPWD)  
 ks/in/2008/Emiss\_Summary/Section-1-2008-Summary-Charts-em-chart Oct-16-2012  
 changes to Onroad (MOVES-NEI)

| VOC (Figures 1 and 2)       | VOC TPY        |             | TPSD         |               | VOC With Biogenics: |                     |
|-----------------------------|----------------|-------------|--------------|---------------|---------------------|---------------------|
|                             | TPY            | %           | TPSD         | %             | TPY                 | TPSD %              |
| 1 POINT                     | 5,587          | 3.5%        | 16.4         | 3.3%          | 5,587               | 16.4 1.9%           |
| 2 AREA                      | 82,967         | 51.6%       | 242.3        | 48.4%         | 82,967              | 242.3 27.5%         |
| 3 ON-ROAD MOBILE            | 37,024         | 23.0%       | 111.8        | 22.3%         | 37,024              | 111.8 12.7%         |
| 4 OFF-ROAD MOBILE           | 35,232         | 21.9%       | 130.3        | 26.0%         | 35,232              | 130.3 14.8%         |
| 5 <i>BIOGENICS (BEIS-3)</i> |                |             |              |               | 60,722              | 379.7 43.1%         |
| <b>TOTAL</b>                | <b>160,810</b> | <b>100%</b> | <b>500.8</b> | <b>100.0%</b> | <b>221,531</b>      | <b>880.5 100.0%</b> |

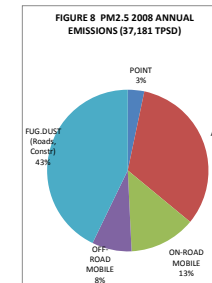
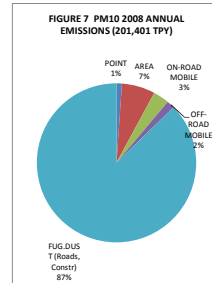
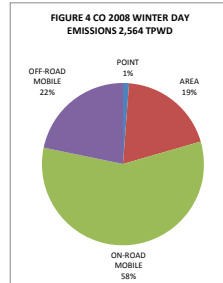
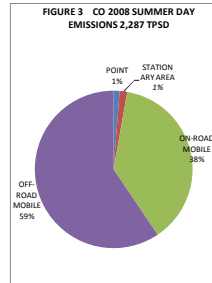
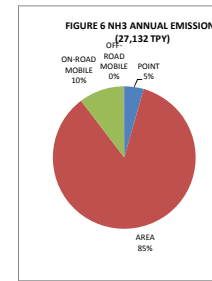
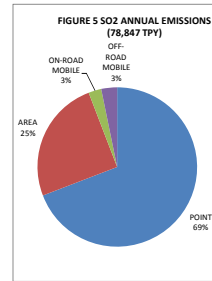
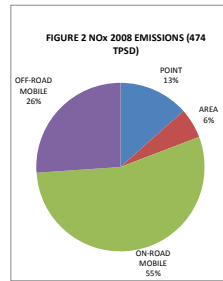
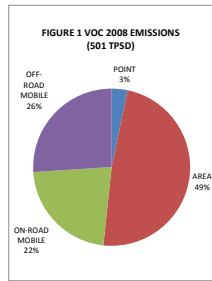
| NOx (Figure 3)              | NOx TPY        |             | TPSD         |               | NOx With Biogenics: |              |
|-----------------------------|----------------|-------------|--------------|---------------|---------------------|--------------|
|                             | TPY            | %           | TPSD         | %             | TPY                 | TPSD %       |
| 1 POINT                     | 22,928         | 13.5%       | 63.6         | 13.4%         | 22,928              | 63.6         |
| 2 AREA                      | 19,922         | 11.7%       | 27.2         | 5.7%          | 19,922              | 27.2         |
| 3 ON-ROAD MOBILE            | 90,163         | 53.0%       | 259.7        | 54.8%         | 90,163              | 259.7        |
| 4 OFF-ROAD MOBILE           | 37,211         | 21.9%       | 123.7        | 26.1%         | 37,211              | 123.7        |
| 5 <i>BIOGENICS (BEIS-3)</i> |                |             |              |               | 955                 | 3.9          |
| <b>TOTAL</b>                | <b>170,224</b> | <b>100%</b> | <b>474.3</b> | <b>100.0%</b> | <b>171,179</b>      | <b>478.2</b> |

| CO (Figures 4 and 5)        | CO TPY         |             | TPSD           |               | TPWD           |               |
|-----------------------------|----------------|-------------|----------------|---------------|----------------|---------------|
|                             | TPY            | %           | TPSD           | %             | TPWD           | %             |
| 1 POINT                     | 9,861          | 1.2%        | 27.8           | 1.2%          | 30.6           | 1.2%          |
| 2 AREA                      | 68,554         | 8.2%        | 36.0           | 1.6%          | 494.5          | 19.3%         |
| 3 ON-ROAD MOBILE            | 428,396        | 51.3%       | 863.7          | 37.8%         | 1,481.8        | 57.8%         |
| 4 OFF-ROAD MOBILE           | 327,495        | 39.3%       | 1,359.8        | 59.5%         | 556.6          | 21.7%         |
| Anthropogenic Total         | <b>834,306</b> | <b>100%</b> | <b>2,287.3</b> | <b>100.0%</b> | <b>2,563.5</b> | <b>100.0%</b> |
| 5 <i>BIOGENICS (BEIS-3)</i> | 11,372         |             | 61.7           |               | 4.1            |               |
| <b>TOTAL with Biogenics</b> | <b>845,678</b> |             | <b>2,349.0</b> |               | <b>2,567.6</b> |               |

| REGIONAL HAZE POLLUTANTS: (Figures 6 to 9) |               |             |               |               |
|--|---------------|-------------|---------------|---------------|
|  | SO2 TPY       |             | NH3 TPY       |               |
|  | TPY           | %           | TPY           | %             |
| 1 POINT                                    | 54,547        | 69.2%       | 929           | 4.4%          |
| 2 AREA                                     | 19,691        | 25.0%       | 18,021        | 85.3%         |
| 3 ON-ROAD MOBILE                           | 2,048         | 2.6%        | 2,149         | 10.2%         |
| 4 OFF-ROAD MOBILE                          | 2,561         | 3.2%        | 33            | 0.2%          |
| <b>TOTAL</b>                               | <b>78,847</b> | <b>100%</b> | <b>21,132</b> | <b>100.0%</b> |

|                           | PM10 TPY       |             | PM2.5 TPY     |               |
|---------------------------|----------------|-------------|---------------|---------------|
|                           | TPY            | %           | TPY           | %             |
| 1 POINT                   | 2,173          | 1.1%        | 1,231         | 3.3%          |
| 2 AREA                    | 13,684         | 6.8%        | 12,142        | 32.7%         |
| 3 ON-ROAD MOBILE          | 6,567          | 3.3%        | 4,934         | 13.3%         |
| 4 OFF-ROAD MOBILE         | 3,162          | 1.6%        | 2,963         | 8.0%          |
| 5 FUG.DUST (Roads, Const) | 175,815        | 87.3%       | 15,912        | 42.8%         |
| <b>TOTAL</b>              | <b>201,401</b> | <b>100%</b> | <b>37,181</b> | <b>100.0%</b> |



ks/in/2008/Emiss\_Summary/Section-1-2008-Summary-Charts-em-chart Oct 16, 2012

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**TABLE 2 STATEWIDE 2008 EMISSIONS BY CATEGORIES ALL POLLUTANTS**

| ks/inv2008/Emiss Summary/ Section-1-2008-Summary-Charts-em-chart Oct-16 2012 |            |        |                            |               |                                   |              |               |              |              |                |               | PM10          | PM25         |  |
|--|------------|--------|----------------------------|---------------|-----------------------------------|--------------|---------------|--------------|--------------|----------------|---------------|---------------|--------------|--|
|  | Estim:     | VOC    | VOC                        | NOx           | NOx                               | CO           | CO            | CO           | SO2          | PM10           | PM25          | NH3           |              |  |
| SOURCE CATEGORY  | SCC        | Origin | TPY                        | TPSD          | TPY                               | TPSD         | TPY           | TPSD         | TPWD         | TPY            | TPY           | TPY           |              |  |
| <b>POINT SOURCES</b>   |            |        |                            |               |                                   |              |               |              |              |                |               |               |              |  |
| EGU Point Sources  |            |        | 434.6                      | 1.18          | 9771.9                            | 26.57        | 4279.2        | 11.71        | 13.37        | 46463.5        | 673.3         | 534.4         | 198.4        |  |
| Non-EGU Point Sources  |            |        | 5152.7                     | 15.24         | 13155.7                           | 37.07        | 5581.9        | 16.06        | 17.27        | 8083           | 1499.8        | 696.3         | 730.5        |  |
| <b>TOTAL POINT SOURCES</b>   |            |        | <b>5587.3</b>              | <b>16.42</b>  | <b>22927.6</b>                    | <b>63.64</b> | <b>9861.1</b> | <b>27.77</b> | <b>30.64</b> | <b>54546.5</b> | <b>2173.1</b> | <b>1230.7</b> | <b>928.9</b> |  |
| <b>AREA SOURCES</b>  |            |        |                            |               |                                   |              |               |              |              |                |               |               |              |  |
| <b>Waste Treatment</b>   |            |        |                            |               |                                   |              |               |              |              |                |               |               |              |  |
| 1. POTW's  | 2630020000 | MA     | 127.5                      | 0.35          |                                   |              |               |              |              |                |               |               | 20.4         |  |
| 2. HW TSDF   | 2640000000 | MA     | 14.7                       | 0.04          |                                   |              |               |              |              |                |               |               |              |  |
| 3. MSW Landfills   | 2620030000 | MA     | 1377.1                     | 3.77          |                                   |              |               |              |              |                |               |               |              |  |
| <b>Total Waste Treatment</b>   |            |        | <b>1519.3</b>              | <b>4.2</b>    | <b>0.0</b>                        | <b>0.0</b>   | <b>0.0</b>    | <b>0.0</b>   | <b>0.0</b>   | <b>0.0</b>     | <b>0.0</b>    | <b>0.0</b>    | <b>20.4</b>  |  |
| <b>Gasoline Distribution</b>   |            |        |                            |               |                                   |              |               |              |              |                |               |               |              |  |
| 1. Tank Truck Unl. (Stage I)   | 2501060053 | MA     | 2049.7                     | 6.73          |                                   |              |               |              |              |                |               |               |              |  |
| 2. Vehicle Refuel. (Stage II)  |            | MA     | In On-Road Mobile category |               |                                   |              |               |              |              |                |               |               |              |  |
| 3. Underground Tank Breath.  | 2501060201 | MA     | 1403.9                     | 3.91          |                                   |              |               |              |              |                |               |               |              |  |
| 4. Transit Losses  | 2505030120 | MA     | 210.1                      | 0.69          |                                   |              |               |              |              |                |               |               |              |  |
| 5. Petro Vessel Unload/Losses  | 2505020120 | MA     | 363.8                      | 1.00          |                                   |              |               |              |              |                |               |               |              |  |
| 6. Portable Fuel Contain Reside  | 250101101x | EPA    | 1539.2                     | 6.69          |                                   |              |               |              |              |                |               |               |              |  |
| 7. Portable Fuel Contain Comm  | 250101201x | EPA    | 544.8                      | 2.07          |                                   |              |               |              |              |                |               |               |              |  |
| 8. Aviation Gas Refuel Stage I   | 2501080050 | MA     | 35.3                       | 0.10          |                                   |              |               |              |              |                |               |               |              |  |
| 9. Aviation Gas Refuel Stage II  | 2501080100 | MA     | 24.9                       | 0.07          |                                   |              |               |              |              |                |               |               |              |  |
| 10. Aviation Gas Ref.U.Tank Br   | 2501080201 | MA     | 9.7                        | 0.03          |                                   |              |               |              |              |                |               |               |              |  |
| <b>Total Gasoline Distribution</b>   |            |        | <b>6181.4</b>              | <b>21.29</b>  |                                   |              |               |              |              |                |               |               |              |  |
| <b>Stationary Source Solvent Evap.</b>                                       |            |        |                            |               |                                   |              |               |              |              |                |               |               |              |  |
| 1. Dry Cleaning  | 2420000000 | MA     | 15.1                       | 0.05          |                                   |              |               |              |              |                |               |               |              |  |
| 2. Surface Cleaning -degrease  | 2415000000 | MA     | 5494.9                     | 17.61         |                                   |              |               |              |              |                |               |               |              |  |
| 3. Commerc/Consumer Solvents   | 2460000000 | MA     | 22937.8                    | 62.84         |                                   |              |               |              |              |                |               |               |              |  |
| 4. Graphic Arts:   | 2425000000 | MA     | 4020.7                     | 15.46         |                                   |              |               |              |              |                |               |               |              |  |
| 5. Industrial Adhesives -Total   | 2440020000 | MA     | 3916.6                     | 10.73         |                                   |              |               |              |              |                |               |               |              |  |
| <b>Total Solvent Evaporation</b>   |            |        | <b>36385.1</b>             | <b>106.69</b> |                                   |              |               |              |              |                |               |               |              |  |
| <b>Non-Indus. Surface Coating:</b>   |            |        |                            |               |                                   |              |               |              |              |                |               |               |              |  |
| 1. Auto. Refinish  | 2401005000 | MA     | 2078.6                     | 7.99          |                                   |              |               |              |              |                |               |               |              |  |
| 2. AIM Architect. Coating  | 2401001000 | MA     | 11956.3                    | 42.58         |                                   |              |               |              |              |                |               |               |              |  |
| 3. AIM Traffic Marking   | 2401008000 | MA     | 1299.6                     | 4.63          |                                   |              |               |              |              |                |               |               |              |  |
| 3.AIM High Perf. Maintenance   | 2401100000 | MA     | 2079.3                     | 7.41          |                                   |              |               |              |              |                |               |               |              |  |
| 4. AIM Oth. Spectly Purp Coat  | 2401200000 | MA     | 2079.3                     | 7.41          |                                   |              |               |              |              |                |               |               |              |  |
| <b>Total Auto Ref &amp; AIM Coating</b>                                      |            |        | <b>19493.1</b>             | <b>70.02</b>  |                                   |              |               |              |              |                |               |               |              |  |
| <b>Industrial Coating:</b>   |            |        |                            |               |                                   |              |               |              |              |                |               |               |              |  |
| 1. Furniture & Fixtures -Wood  | 2401020000 | EPA    | 506.5                      | 1.95          |                                   |              |               |              |              |                |               |               |              |  |
| 2. Metal Furniture   | 2401025000 | EPA    | 740.7                      | 2.85          |                                   |              |               |              |              |                |               |               |              |  |
| 2. Metal Can Containers  | 2401040000 | EPA    | 177.1                      | 0.68          |                                   |              |               |              |              |                |               |               |              |  |
| 3. Motor Vehicles New  | 2401070000 | EPA    | 179.9                      | 0.69          |                                   |              |               |              |              |                |               |               |              |  |
| 4. Machinery & Equip.  | 2401055000 | EPA    | 364.7                      | 1.40          |                                   |              |               |              |              |                |               |               |              |  |
| 5. Appliances  | 2401060000 | EPA    | 18.2                       | 0.07          |                                   |              |               |              |              |                |               |               |              |  |
| 6. Other Transport Eq. Aircraft  | 2401075000 | EPA    | 10.4                       | 0.04          |                                   |              |               |              |              |                |               |               |              |  |
| 7. Other Transport Eq. Marine  | 2401080000 | EPA    | 71.7                       | 0.28          |                                   |              |               |              |              |                |               |               |              |  |
| 8. Other Transport Eq. Rail  | 2401085000 | EPA    | 0.9                        | 0.00          |                                   |              |               |              |              |                |               |               |              |  |
| 9. Metal Sheet, Strip,Coil   | 2401045000 | EPA    | 582.5                      | 2.24          |                                   |              |               |              |              |                |               |               |              |  |
| 10. Factory Finished Wood  | 2401015000 | EPA    | 73.6                       | 0.28          |                                   |              |               |              |              |                |               |               |              |  |
| 11. Electronic Insulation & Coat   | 2401065000 | EPA    | 45.8                       | 0.18          |                                   |              |               |              |              |                |               |               |              |  |
| 12. Misc Mfg, Other Prod. Coat   | 2401090000 | EPA    | 1892.5                     | 7.28          |                                   |              |               |              |              |                |               |               |              |  |
| 14. Paper Film & Foil Coat   | 2401030000 | EPA    | 861.1                      | 3.31          |                                   |              |               |              |              |                |               |               |              |  |
| <b>Total Industrial Coating</b>  |            |        | <b>5525.6</b>              | <b>21.25</b>  |                                   |              |               |              |              |                |               |               |              |  |
| <b>Miscellaneous Solvents:</b>   |            |        |                            |               |                                   |              |               |              |              |                |               |               |              |  |
| 1. Cutback Asphalt   | 2461021000 | MA     | 309.4                      | 3.43          | (Revised March 2011 - Ken & Azin) |              |               |              |              |                |               |               |              |  |
| 2. Emulsified Asphalt  | 2461022000 | EPA    | 21.1                       | 0.23          | (Revised March 2011 - Ken & Azin) |              |               |              |              |                |               |               |              |  |
| 3. Agricultural Pesticide Use  | 2461850000 | MA     | 407.4                      | 1.90          |                                   |              |               |              |              |                |               |               |              |  |
| 4. Non-Agric Pesticide Use   | 2461870999 | MA     | 309.9                      | 1.45          |                                   |              |               |              |              |                |               |               |              |  |
| 5. Bakeries  | 2302050000 | MA     | 519.5                      | 1.67          |                                   |              |               |              |              |                |               |               |              |  |
| 6. Breweries/Wineries/Distiller  | 2302070000 | MA     | 95.2                       | 0.26          |                                   |              |               |              |              |                |               |               |              |  |
| 7. Petroleum Spills  | 2830000000 | MA     | 355.7                      | 0.97          |                                   |              |               |              |              |                |               |               |              |  |
| 8. Asphalt Roof, Kettles & Tanks   | 2461023000 | MA     | 536.7                      | 2.41          | 10.4                              | 0.05         | 34.6          | 0.16         | 0.16         | 7.6            | 10.4          |               |              |  |
| 9. Leaking USTs  | 2660000000 | MA     | 12.1                       | 0.03          |                                   |              |               |              |              |                |               |               |              |  |
| <b>Total Miscellaneous Solvents</b>  |            |        | <b>2567.0</b>              | <b>12.35</b>  | <b>10.4</b>                       | <b>0.05</b>  | <b>34.6</b>   | <b>0.16</b>  | <b>0.16</b>  | <b>7.6</b>     | <b>10.4</b>   | <b>0.0</b>    | <b>0.0</b>   |  |

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|--|------------|-------------------------------|----------------|---------------|----------------|--------------|-----------------|----------------|---------------|----------------|----------------|----------------|----------------|
|  |            | Estim:                        | VOC            | VOC           | NOx            | NOx          | CO              | CO             | CO            | SO2            | PRI            | PRI            | NH3            |
| SOURCE CATEGORY  | SCC        | Origin                        | TPY            | TPSD          | TPY            | TPSD         | TPY             | TPSD           | TPWD          | TPY            | TPY            | TPY            | TPY            |
| <u>Small Statory Fuel Combustion</u>   |            |                               |                |               |                |              |                 |                |               |                |                |                |                |
| 1. Residential Bituminous Coal   | 2104002000 | MA                            | 10.0           | 0.00          | 9.1            | 0.00         | 275.0           | 0.00           | 2.29          | 31.0           | 6.3            | 3.9            | 2.0            |
|  |            |                               |                |               |                | 11           |                 |                |               |                |                |                |                |
| 2. Residential Distillate Oil  | 2104004000 | MA                            | 237.4          | 0.23          | 5993.4         | 5.86         | 1664.8          | 1.63           | 8.51          | 14184.3        | 792.5          | 709.2          | 333.0          |
| 3. Residential Natural Gas   | 2104006000 | MA                            | 314.1          | 0.31          | 5368.6         | 5.25         | 2284.5          | 2.23           | 11.68         | 34.3           | 29.7           | 24.6           | 1142.3         |
| 4. Residential Wood-burn-Indoor  | 2104008000 | EPA                           | 8892.0         | 0.00          | 828.1          | 0.00         | 49079.9         | 0.00           | 409.00        | 138.6          | 7049.0         | 7041.5         | 405.4          |
| 5. Residential Woodburn-Outdoor  | 2104008610 | EPA                           | 156.5          | 0.43          | 24.4           | 0.07         | 2434.5          | 6.62           | 13.23         | 26.9           | 366.0          | 366.0          | 23.9           |
| 5. Residential Kerosene  | 2104011000 | MA                            | 1.1            | 0.00          | 65.3           | 0.06         | 16.2            | 0.02           | 0.08          | 144.0          | 7.9            | 7.1            | 2.7            |
| 6. Residential LPG   | 2104007000 | MA                            | 22.7           | 0.02          | 583.9          | 0.57         | 165.6           | 0.16           | 0.85          | 2.6            | 2.2            | 1.8            | 2.2            |
| <b>Total Residential Fuel</b>  |            |                               | <b>9633.8</b>  | <b>0.99</b>   | <b>12872.8</b> | <b>22.81</b> | <b>55920.6</b>  | <b>10.66</b>   | <b>445.64</b> | <b>14561.7</b> | <b>8253.5</b>  | <b>8154.1</b>  | <b>1911.5</b>  |
| 1. Commercial/Instit Bitum Coal  | 2103002000 | MA                            | 0.5            | 0.00          | 104.5          | 0.10         | 47.5            | 0.05           | 0.24          | 361.0          | 123.9          | 23.2           | 0.0            |
| 2. Commercial/Instit Dist.Oil  | 2103004000 | MA                            | 20.9           | 0.02          | 1227.8         | 1.42         | 307.0           | 0.35           | 1.81          | 2615.2         | 146.1          | 130.8          | 61.4           |
| 3. Commercial/Instit Res.Oil   | 2103005000 | MA                            | 4.5            | 0.01          | 217.3          | 0.25         | 19.8            | 0.02           | 0.12          | 418.5          | 20.4           | 11.3           | 3.2            |
| 4. Commercial/Instit N.Gas   | 2103006000 | MA                            | 117.7          | 0.14          | 2140.1         | 2.47         | 1797.7          | 2.07           | 10.60         | 12.8           | 11.1           | 9.2            | 10.5           |
| 5. Commercial/Instit Kerosene  | 2103011000 | MA                            | 0.2            | 0.00          | 10.1           | 0.01         | 2.5             | 0.00           | 0.02          | 74.5           | 1.2            | 1.1            | 0.0            |
| 6. Commercial/Instit LPG   | 2103007000 | MA                            | 4.0            | 0.01          | 72.5           | 0.08         | 91.3            | 0.11           | 0.54          | 0.5            | 0.4            | 0.3            | 0.4            |
| 7. Commercial/Instit Wood & Prod   | 2103081000 | MA                            | 0.0            | 0.0           | 0.0            | 0.0          | 0.0             | 0.00           | 0.00          | 0.0            | 0.0            | 0.0            | 0.0            |
| <b>Total Commercial/Instit Fuel</b>  |            |                               | <b>147.8</b>   | <b>0.18</b>   | <b>3772.3</b>  | <b>4.33</b>  | <b>2265.8</b>   | <b>2.60</b>    | <b>13.33</b>  | <b>3482.5</b>  | <b>303.1</b>   | <b>175.9</b>   | <b>75.5</b>    |
| 1. Small Industrial Bitum Coal   | 2102001000 | MA                            | 0.0            | 0.0           | 0.0            | 0.0          | 0.0             | 0.00           | 0.00          | 0.0            | 0.0            | 0.0            | 0.0            |
| 2. Small Industrial Dist.Oil   | 2102004000 | MA                            | 5.1            | 0.02          | 507.8          | 1.95         | 127.0           | 0.49           | 0.90          | 1081.7         | 58.4           | 39.4           | 20.3           |
| 3. Small Industrial Res.Oil  | 2102005000 | MA                            | 2.9            | 0.01          | 574.2          | 2.21         | 52.2            | 0.20           | 0.27          | 491.7          | 68.5           | 50.1           | 8.7            |
| 4. Small Industrial N.Gas  | 2102006000 | MA                            | 70.6           | 0.27          | 1283.0         | 4.94         | 1077.8          | 4.10           | 7.63          | 7.7            | 8.9            | 7.7            | 41.1           |
| 5. Small Industrial Kerosene   | 2102011000 | MA                            | 0.0            | 0.0           | 0.0            | 0.0          | 0.0             | 0.00           | 0.00          | 0.0            | 0.0            | 0.0            | 0.0            |
| 6. Small Industrial LPG  | 2102001000 | MA                            | 9.5            | 0.04          | 258.8          | 1.00         | 145.0           | 0.56           | 1.03          | 1.1            | 0.9            | 0.7            | 0.9            |
| 7. Small Industrial Wood-Products  | 2102008000 | MA                            | 30.3           | 0.04          | 391.4          | 0.54         | 1067.6          | 1.48           | 7.56          | 44.5           | 895.3          | 773.1          | 21.4           |
| <b>Total Industrial Fuel</b>   |            |                               | <b>118.4</b>   | <b>0.38</b>   | <b>3015.2</b>  | <b>10.64</b> | <b>2469.6</b>   | <b>6.83</b>    | <b>17.39</b>  | <b>1626.7</b>  | <b>1032.0</b>  | <b>871.0</b>   | <b>92.4</b>    |
| 1. Open Burn -Household Waste  | 2610030000 | EPA                           | 99.0           | 0.08          | 69.4           | 0.05         | 982.6           | 0.75           | 2.73          | 11.6           | 439.3          | 439.3          |                |
| 2. Open Burn -Land Clearing D  | 2610005000 | EPA                           | 269.2          | 0.21          | 116.0          | 0.09         | 3921.3          | 2.98           | 10.89         | 0.0            | 394.5          | 394.5          |                |
| 3. Open Burning -Leaf Waste  | 2610000100 | EPA                           | 13.3           | 0.00          | 2.9            | 0.00         | 53.1            | 0.04           | 0.15          | 0.4            | 10.4           | 10.4           |                |
| 4. Open Burning -Yard Waste  | 2610040400 | EPA                           | 9.0            | 0.01          | 2.4            | 0.00         | 66.4            | 0.05           | 0.18          | 0.8            | 9.4            | 9.4            |                |
| <b>Total Waste Burning</b>   |            |                               | <b>390.5</b>   | <b>0.30</b>   | <b>190.7</b>   | <b>0.15</b>  | <b>5023.4</b>   | <b>3.82</b>    | <b>13.95</b>  | <b>12.8</b>    | <b>853.6</b>   | <b>853.6</b>   | <b>0.0</b>     |
| 1. Wildfires: Forest/Brush   | 2810001000 | EPA                           | 275.2          | 0.45          | 45.6           | 0.22         | 1608.3          | 8.74           | 0.45          | 0.0            | 195.2          | 166.0          | 30.3           |
| 2. Structural Fires  | 2810030000 | MA                            | 103.7          | 0.23          | 13.2           | 0.03         | 565.9           | 1.34           | 1.75          |                | 101.9          | 97.8           |                |
| 3. Vehicle Fires   | 2610000000 | MA                            | 12.3           | 0.03          | 1.6            | 0.00         | 48.1            | 0.15           | 0.12          |                | 38.5           | 36.9           |                |
| 4. Food Preparation Backyard Grills  | 2810025000 | MA                            | 378.8          | 3.29          |                |              |                 |                |               |                |                |                |                |
| 5. Food Prep - Commercial-All  | 230200xxxx | EPA                           | 235.0          | 0.64          | 0.0            | 0            | 617.8           | 1.69           | 1.69          | 0.0            | 1665.6         | 1540.2         | 0.0            |
| <b>Total Fires/ Cooking</b>  |            |                               | <b>1005.0</b>  | <b>4.64</b>   | <b>60.4</b>    | <b>0.26</b>  | <b>2840.05</b>  | <b>11.92</b>   | <b>4.01</b>   | <b>0.00</b>    | <b>2001.2</b>  | <b>1840.8</b>  | <b>30.3</b>    |
| <u>Agricultural, Human, Pets, Wildlife, Soils</u>                            |            |                               |                |               |                |              |                 |                |               |                |                |                |                |
| 1. Agricultural Livestock  | 28050xxxx  | EPA/CMU                       |                |               |                |              |                 |                |               |                |                |                | 1426.2         |
| 2. Humans  | 2810010000 | EPA/CMU -grown from 2002 -pop |                |               |                |              |                 |                |               |                |                |                | 3150.1         |
| 3. Cats  | 2806010000 | EPA/CMU -grown from 2002 -pop |                |               |                |              |                 |                |               |                |                |                | 1228.9         |
| 4. Dogs  | 2806015000 | EPA/CMU -grown from 2002 -pop |                |               |                |              |                 |                |               |                |                |                | 3415.0         |
| 5. Wild Animals  | 2807030000 | EPA/CMU                       |                |               |                |              |                 |                |               |                |                |                | 605.1          |
| 6. Soils   | 2701420000 | EPA/CMU                       |                |               |                |              |                 |                |               |                |                |                | 5654.6         |
| 7. Agricultural Fertilizer Applic  | 2801700000 | EPA/CMU                       |                |               |                |              |                 |                |               |                |                |                | 411.1          |
| 8. Agricultural Tilling  | 2801000003 | MA                            |                |               |                |              |                 |                |               |                | 1230.3         | 246.1          |                |
| <b>Total Agricultural, Human, Pets, Wildlife, Soils</b>                      |            |                               |                |               |                |              |                 |                |               |                | <b>1230.3</b>  | <b>246.1</b>   | <b>15891.0</b> |
| <b>TOTAL AREA SOURCE</b>   |            |                               | <b>82967.0</b> | <b>242.25</b> | <b>19921.8</b> | <b>38.2</b>  | <b>68554.1</b>  | <b>36.0</b>    | <b>494.5</b>  | <b>19691.3</b> | <b>13684.2</b> | <b>12141.5</b> | <b>18021.1</b> |
| <u>OFF-HIGHWAY</u>   |            |                               |                |               |                |              |                 |                |               |                |                |                |                |
| 1. Aircraft  | 2275050000 | EPA                           | 1094.8         | 3.00          | 3186.8         | 8.73         | 15691.6         | 42.99          | 42.99         | 218.4          | 299.2          | 236.4          | 0.0            |
| 2. Railroads   | 2285002000 | EPA/M                         | 251.5          | 0.69          | 5203.4         | 14.26        | 648.4           | 1.78           | 1.78          | 269.8          | 159.1          | 145.9          | 2.5            |
| 3. Commercial Marine Vessels   | 2280020010 | EPA                           | 528.5          | 1.45          | 3246.0         | 8.89         | 1473.1          | 4.04           | 4.00          | 648.4          | 315.7          | 290.3          |                |
| 4. NonRoad Equipment   |            |                               | 33356.9        | 125.17        | 25575.2        | 91.80        | 309681.8        | 1311.02        | 507.80        | 1424.1         | 2387.9         | 2290.4         | 30.5           |
| <b>Total Off-Highway</b>   |            |                               | <b>35231.7</b> | <b>130.31</b> | <b>37211.4</b> | <b>123.7</b> | <b>327494.9</b> | <b>1359.83</b> | <b>556.57</b> | <b>2560.7</b>  | <b>3161.9</b>  | <b>2963.0</b>  | <b>33.0</b>    |
| <u>FUGITIVE DUST PM CATEGORIES</u>   |            |                               |                |               |                |              |                 |                |               |                |                |                |                |
| 1. Residential Construction  | 2311010000 | EPA                           |                |               |                |              |                 |                |               |                | 282.3          | 28.2           |                |
| 2. Non-Residential Construction  | 2311020001 | EPA                           |                |               |                |              |                 |                |               |                | 14169.8        | 1417.0         |                |
| 3. Road Construction   | 2311030000 | EPA                           |                |               |                |              |                 |                |               |                | 20297.7        | 2029.8         |                |
| 4. Paved Roads (MANEVU)  | 2294000000 | EPA                           |                |               |                |              |                 |                |               |                | 32747.9        | 1622.3         |                |
| 5. Unpaved Roads (MANEVU)  | 2296000000 | EPA                           |                |               |                |              |                 |                |               |                | 106317.9       | 10564.4        |                |
| 6. Mining & Quarrying  | 2325000000 | EPA                           |                |               |                |              |                 |                |               |                | 1999.8         | 250.0          |                |

| ks/inv2008/Emiss Summary/ Section-1-2008-Summary-Charts-em-chart Oct-16 2012 |     |              |                 |               |                 |               |                 |                |                |                | PM10            | PM25           |                |
|--|-----|--------------|-----------------|---------------|-----------------|---------------|-----------------|----------------|----------------|----------------|-----------------|----------------|----------------|
| SOURCE CATEGORY  | SCC | Origin       | VOC<br>TPY      | VOC<br>TPSD   | NOx<br>TPY      | NOx<br>TPSD   | CO<br>TPY       | CO<br>TPSD     | CO<br>TPWD     | SO2<br>TPY     | PRI<br>TPY      | PRI<br>TPY     | NH3<br>TPY     |
| <u>Total Fugitive Dust Categories</u>  |     |              |                 |               |                 |               |                 |                |                |                | 175815.4        | 15911.7        |                |
| <b>TOTAL ON-ROAD MOBILE</b>  |     | <u>EPA/D</u> | <u>37023.7</u>  | <u>111.8</u>  | <u>90162.7</u>  | <u>259.7</u>  | <u>428396.0</u> | <u>863.70</u>  | <u>1481.80</u> | <u>2048.3</u>  | <u>6566.8</u>   | <u>4934.2</u>  | <u>2149.4</u>  |
| <b>TOTAL EMISSIONS</b>   |     |              | <b>160809.7</b> | <b>500.78</b> | <b>170223.5</b> | <b>485.25</b> | <b>834306.1</b> | <b>2287.30</b> | <b>2563.49</b> | <b>78846.8</b> | <b>201401.4</b> | <b>37181.1</b> | <b>21132.4</b> |
|  |     |              |                 |               |                 | 12            |                 |                |                |                |                 |                |                |

**TABLE 3 2008 VOC & NOx EMISSIONS BY CATEGORIES -Eastern and Western MA**

ks/inv2008/Emiss Summary/ Section-1-2008-Summary-Charts-em-chart Oct-16 2012

| SOURCE CATEGORY                         | SCC        | Estim Origin | VOC                        |                 |                |               | VOC          |              |                                       | NOx             |                |              | NOx          |             |  |
|---|------------|--------------|----------------------------|-----------------|----------------|---------------|--------------|--------------|---------------------------------------|-----------------|----------------|--------------|--------------|-------------|--|
|   |            |              | TPY                        | EMA-TPY         | WMA-TPY        | TPSD          | EMA          | WMA          | TPY                                   | EMA-TPY         | WMA-TPY        | TPSD         | EMA          | WMA         |  |
| <b>POINT SOURCES</b>                    |            |              |                            |                 |                |               |              |              |                                       |                 |                |              |              |             |  |
| EGU Point Sources                       |            |              | 434.6                      | 322.7           | 111.9          | 1.18          | 0.87         | 0.31         | 9,771.9                               | 8,903.9         | 868.0          | 26.57        | 24.19        | 2.37        |  |
| Non-EGU Point Sources                   |            |              | 5,152.7                    | 4,323.0         | 829.7          | 15.24         | 12.85        | 2.39         | 13,155.7                              | 11,384.4        | 1,771.3        | 37.07        | 32.15        | 4.93        |  |
| <b>TOTAL POINT SOURCES</b>              |            |              | <b>5,587.3</b>             | <b>4,645.7</b>  | <b>941.6</b>   | <b>16.42</b>  | <b>13.72</b> | <b>2.70</b>  | <b>22,927.6</b>                       | <b>20,288.3</b> | <b>2,639.3</b> | <b>63.64</b> | <b>56.34</b> | <b>7.30</b> |  |
| <b>AREA SOURCES</b>                     |            |              |                            |                 |                |               |              |              |                                       |                 |                |              |              |             |  |
| <b>Waste Treatment</b>                  |            |              |                            |                 |                |               |              |              |                                       |                 |                |              |              |             |  |
| 1. POTW's                               | 2630020000 | MA           | 127.5                      | 107.7           | 19.8           | 0.35          | 0.28         | 0.05         |                                       |                 |                |              |              |             |  |
| 2. HW TSDF                              | 2640000000 | MA           | 14.7                       | 12.1            | 2.6            | 0.04          | 0.03         | 0.01         |                                       |                 |                |              |              |             |  |
| 3. MSW Landfills                        | 2620030000 | MA           | 1,377.0                    | 1,050.0         | 327.1          | 3.77          | 2.88         | 0.90         |                                       |                 |                |              |              |             |  |
| <b>Total Waste Treatment</b>            |            |              | <b>1,519.3</b>             | <b>1,169.8</b>  | <b>349.6</b>   | <b>4.16</b>   | <b>3.19</b>  | <b>0.96</b>  |                                       |                 |                |              |              |             |  |
| <b>Gasoline Distribution</b>            |            |              |                            |                 |                |               |              |              |                                       |                 |                |              |              |             |  |
| 1. Tank Truck Unl. (Stage I)            | 2501060053 | MA           | 2,049.7                    | 1,721.5         | 328.1          | 6.73          | 5.65         | 1.08         |                                       |                 |                |              |              |             |  |
| 2. Vehicle Refuel. (Stage II)           |            | MA           | In On-Road Mobile category |                 |                |               |              |              |                                       |                 |                |              |              |             |  |
| 3. Underground Tank Breath.             | 2501060201 | MA           | 1,403.9                    | 1,179.1         | 224.7          | 3.91          | 3.28         | 0.63         |                                       |                 |                |              |              |             |  |
| 4. Transit Losses                       | 2505030120 | MA           | 210.1                      | 176.4           | 33.6           | 0.69          | 0.58         | 0.11         |                                       |                 |                |              |              |             |  |
| 5. Petro Vessel Unload/Losses           | 2505020120 | MA           | 363.8                      | 363.9           | 0.0            | 1.00          | 1.00         | 0.00         |                                       |                 |                |              |              |             |  |
| 6. Portable Fuel Contain Residen        | 250101101x | EPA          | 1,539.2                    | 1,369.4         | 169.8          | 6.69          | 5.95         | 0.74         |                                       |                 |                |              |              |             |  |
| 7. Portable Fuel Contain Comm           | 250101201x | EPA          | 544.8                      | 484.7           | 60.1           | 2.07          | 1.84         | 0.23         |                                       |                 |                |              |              |             |  |
| 8. Aviation Gas Refuel Stage I          | 2501080050 | MA           | 35.3                       | 28.2            | 7.1            | 0.10          | 0.08         | 0.02         |                                       |                 |                |              |              |             |  |
| 9. Aviation Gas Refuel Stage II         | 2501080100 | MA           | 24.9                       | 19.8            | 5.0            | 0.07          | 0.05         | 0.01         |                                       |                 |                |              |              |             |  |
| 10. Aviation Gas Ref.U.Tank Br          | 2501080201 | MA           | 9.7                        | 7.7             | 2.0            | 0.03          | 0.02         | 0.01         |                                       |                 |                |              |              |             |  |
| <b>Total Gasoline Distribution</b>      |            |              | <b>6,181.2</b>             | <b>5,350.8</b>  | <b>830.4</b>   | <b>21.29</b>  | <b>18.45</b> | <b>2.83</b>  |                                       |                 |                |              |              |             |  |
| <b>Stationary Source Solvent Evap.</b>  |            |              |                            |                 |                |               |              |              |                                       |                 |                |              |              |             |  |
| 1. Dry Cleaning                         | 2420000000 | MA           | 15.1                       | 14.5            | 0.6            | 0.05          | 0.05         | 0.00         |                                       |                 |                |              |              |             |  |
| 2. Surface Cleaning -degrease           | 2415000000 | MA           | 5,494.9                    | 4,729.6         | 765.3          | 17.61         | 15.16        | 2.45         |                                       |                 |                |              |              |             |  |
| 3. Commerc/Consumer Solvents            | 2460000000 | MA           | 22,937.8                   | 20,054.0        | 2,883.8        | 62.84         | 54.94        | 7.90         |                                       |                 |                |              |              |             |  |
| 4. Graphic Arts:                        | 2425000000 | MA           | 4,020.7                    | 3,500.6         | 520.1          | 15.46         | 13.46        | 2.00         |                                       |                 |                |              |              |             |  |
| 5. Industrial Adhesives -Total          | 2440020000 | MA           | 3,916.6                    | 3,329.2         | 587.5          | 10.73         | 9.12         | 1.61         |                                       |                 |                |              |              |             |  |
| <b>Total Solvent Evaporation</b>        |            |              | <b>36,385.1</b>            | <b>31,627.9</b> | <b>4,757.3</b> | <b>106.69</b> | <b>92.73</b> | <b>13.96</b> |                                       |                 |                |              |              |             |  |
| <b>Non-Indus. Surface Coating:</b>      |            |              |                            |                 |                |               |              |              |                                       |                 |                |              |              |             |  |
| 1. Auto. Refinish                       | 2401005000 | MA           | 2,078.6                    | 1,812.4         | 266.3          | 7.99          | 6.97         | 1.02         |                                       |                 |                |              |              |             |  |
| 2. AIM Architect. Coating               | 2401001000 | MA           | 11,956.3                   | 10,453.1        | 1,503.2        | 42.58         | 37.23        | 5.35         |                                       |                 |                |              |              |             |  |
| 3. AIM Traffic Marking                  | 2401008000 | MA           | 1,299.6                    | 1,136.2         | 163.4          | 4.63          | 4.05         | 0.58         |                                       |                 |                |              |              |             |  |
| 3.AIM High Perf. Maintenance            | 2401100000 | MA           | 2,079.3                    | 1,817.9         | 261.4          | 7.41          | 6.47         | 0.93         |                                       |                 |                |              |              |             |  |
| 4. AIM Oth. Specity Purp Coat           | 2401200000 | MA           | 2,079.3                    | 1,817.9         | 261.4          | 7.41          | 6.47         | 0.93         |                                       |                 |                |              |              |             |  |
| <b>Total Auto Ref &amp; AIM Coating</b> |            |              | <b>19,493.1</b>            | <b>17,037.5</b> | <b>2,455.7</b> | <b>70.02</b>  | <b>61.19</b> | <b>8.81</b>  |                                       |                 |                |              |              |             |  |
| <b>Industrial Coating:</b>              |            |              |                            |                 |                |               |              |              |                                       |                 |                |              |              |             |  |
| 1. Furniture & Fixtures Wood            | 2401020000 | EPA          | 506.5                      | 443.3           | 63.2           | 1.95          | 1.71         | 0.24         |                                       |                 |                |              |              |             |  |
| 2. Metal Furniture                      | 2401025000 | EPA          | 740.7                      | 703.1           | 37.6           | 2.85          | 2.70         | 0.14         |                                       |                 |                |              |              |             |  |
| 3. Metal Can Containers                 | 2401040000 | EPA          | 177.1                      | 170.6           | 6.5            | 0.68          | 0.66         | 0.02         |                                       |                 |                |              |              |             |  |
| 4. Motor Vehicles New                   | 2401070000 | EPA          | 179.9                      | 179.5           | 0.4            | 0.69          | 0.69         | 0.00         |                                       |                 |                |              |              |             |  |
| 5. Machinery & Equip.                   | 2401055000 | EPA          | 364.7                      | 318.6           | 46.1           | 1.40          | 1.23         | 0.18         |                                       |                 |                |              |              |             |  |
| 6. Appliances                           | 2401060000 | EPA          | 18.2                       | 17.7            | 0.5            | 0.07          | 0.07         | 0.00         |                                       |                 |                |              |              |             |  |
| 7. Other Transport Eq. Aircraft         | 2401075000 | EPA          | 10.4                       | 10.3            | 0.1            | 0.04          | 0.04         | 0.00         |                                       |                 |                |              |              |             |  |
| 8. Other Transport Eq. Marine           | 2401080000 | EPA          | 71.7                       | 71.3            | 0.4            | 0.28          | 0.27         | 0.00         |                                       |                 |                |              |              |             |  |
| 9. Other Transport Eq. Rail             | 2401085000 | EPA          | 0.9                        | 5.0             | 0.4            | 0.00          | 0.00         | 0.00         |                                       |                 |                |              |              |             |  |
| 10. Metal Sheet, Strip,Coil             | 2401045000 | EPA          | 582.5                      | 545.9           | 36.6           | 2.24          | 2.10         | 0.14         |                                       |                 |                |              |              |             |  |
| 11. Factory Finished Wood               | 2401015000 | EPA          | 73.6                       | 57.7            | 16.0           | 0.28          | 0.22         | 0.06         |                                       |                 |                |              |              |             |  |
| 12. Electronic Insulation & Coat        | 2401065000 | EPA          | 45.8                       | 37.0            | 8.8            | 0.18          | 0.14         | 0.03         |                                       |                 |                |              |              |             |  |
| 13. Other Prod. Coat, Misc Mfg          | 2401090000 | EPA          | 1,892.5                    | 1,549.7         | 342.8          | 7.28          | 5.96         | 1.32         |                                       |                 |                |              |              |             |  |
| 14. Paper Film & Foil Coat              | 2401030000 | EPA          | 861.1                      | 483.0           | 378.0          | 3.31          | 1.86         | 1.45         |                                       |                 |                |              |              |             |  |
| <b>Total Industrial Coating</b>         |            |              | <b>5,525.6</b>             | <b>4,592.7</b>  | <b>937.4</b>   | <b>21.25</b>  | <b>17.65</b> | <b>3.58</b>  |                                       |                 |                |              |              |             |  |
| <b>Miscellaneous Solvents:</b>          |            |              |                            |                 |                |               |              |              |                                       |                 |                |              |              |             |  |
| 1. Cutback Asphalt                      | 2461021000 | MA           | 309.4                      | 259.9           | 49.5           | 3.43          | 2.88         | 0.55         | (Revised March 10, 2011 - Ken & Azin) |                 |                |              |              |             |  |
| 2. Emulsified Asphalt                   | 2461022000 | EPA          | 21.1                       | 17.8            | 3.4            | 0.23          | 0.20         | 0.04         | (Revised March 10, 2011 - Ken & Azin) |                 |                |              |              |             |  |
| 3. Agricultural Pesticide Use           | 2461850000 | MA           | 407.4                      | 304.5           | 102.9          | 1.90          | 1.42         | 0.48         |                                       |                 |                |              |              |             |  |
| 4. Non-Agric Pesticide Use              | 2461870999 | MA           | 309.9                      | 269.6           | 40.3           | 1.45          | 1.26         | 0.19         |                                       |                 |                |              |              |             |  |
| 5. Bakeries                             | 2302050000 | MA           | 519.5                      | 487.4           | 32.1           | 1.67          | 1.56         | 0.10         |                                       |                 |                |              |              |             |  |
| 6. Breweries/Wineries/Distiller         | 2302070000 | MA           | 95.2                       | 81.2            | 14.0           | 0.26          | 0.22         | 0.04         |                                       |                 |                |              |              |             |  |
| 7. Petroleum Spills                     | 2830000000 | MA           | 355.7                      | 280.2           | 75.5           | 0.97          | 0.77         | 0.21         |                                       |                 |                |              |              |             |  |
| 8. Asphalt Roof, Kettles & Tanks        | 2461023000 | MA           | 536.7                      | 434.8           | 101.9          | 2.41          | 1.95         | 0.46         | 10.4                                  | 8.4             | 2.0            | 0.05         | 0.04         | 0.01        |  |
| 9. Leaking USTs                         | 2660000000 | MA           | 12.1                       | 9.7             | 2.5            | 0.03          | 0.03         | 0.01         |                                       |                 |                |              |              |             |  |
| <b>Total Miscellaneous Solvents</b>     |            |              | <b>2,567.0</b>             | <b>2,145.0</b>  | <b>422.1</b>   | <b>12.36</b>  | <b>10.28</b> | <b>2.07</b>  | <b>10.4</b>                           | <b>8.4</b>      | <b>2.0</b>     | <b>0.05</b>  | <b>0.04</b>  | <b>0.01</b> |  |
| <b>Small Stationary Fuel Combustion</b> |            |              |                            |                 |                |               |              |              |                                       |                 |                |              |              |             |  |
| 1. Residential Bituminous Coal          | 2104002000 | MA           | 10.0                       | 8.6             | 1.4            | 0.00          | 0.00         | 0.00         | 9.1                                   | 1.3             | 7.8            | 0.00         | 0.00         | 0.00        |  |
| 2. Residential Distillate Oil           | 2104004000 | MA           | 237.4                      | 204.4           | 33.0           | 0.23          | 0.20         | 0.03         | 5,993.4                               | 5,161.1         | 832.2          | 5.86         | 5.05         | 0.81        |  |
| 3. Residential Natural Gas              | 2104006000 | MA           | 314.1                      | 270.5           | 43.6           | 0.31          | 0.26         | 0.04         | 5,368.6                               | 4,623.1         | 745.5          | 5.25         | 4.52         | 0.73        |  |
| 4. Residential Wood-burn-Indoor         | 2104008000 | EPA          | 8,892.0                    | 6,978.6         | 1,913.5        | 0.00          | 0.00         | 0.00         | 828.1                                 | 660.9           | 167.3          | 0.00         | 0.00         | 0.00        |  |
| 5. Residential Woodburn-Outdoor         | 2104008610 | EPA          | 156.5                      | 95.3            | 61.2           | 0.43          | 0.26         | 0.17         | 24.4                                  | 14.9            | 9.5            | 0.07         | 0.04         | 0.03        |  |



**TABLE 4 1990 TO 2008 VOC, NOx, CO & SO2 EMISSIONS TRENDS**

TPSD for VOC, NOx & CO AND TPY for SO2

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| <u>VOC TPSD</u> | (See Figure 9) |             |             |             |             |             |             | Emissions        |                  | %Change             |  |
|-----------------|----------------|-------------|-------------|-------------|-------------|-------------|-------------|------------------|------------------|---------------------|--|
|                 |                |             |             |             |             |             |             | %Change          | Change           | SIP Base Yr         |  |
|                 | <u>1990</u>    | <u>1993</u> | <u>1996</u> | <u>1999</u> | <u>2002</u> | <u>2005</u> | <u>2008</u> | <u>1990-2008</u> | <u>1990-2008</u> | <u>2002 to 2008</u> |  |
| POINT           | 64             | 61          | 43          | 28          | 16          | 17          | 16          | -74%             | -48              | -2.5%               |  |
| AREA*           | 398            | 360         | 321         | 325         | 299         | 301         | 242         | -39%             | -156             | 19.0%               |  |
| MOBILE          | 357            | 308         | 258         | 217         | 152         | 148         | 112         | -69%             | -245             | 26.4%               |  |
| OFF-ROAD**      | 213            | 208         | 204         | 181         | 172         | 154         | 130         | -39%             | -83              | 24.4%               |  |
| TOTAL           | 1,032          | 937         | 826         | 751         | 639         | 620         | 501         | -52%             | -532             | 21.7%               |  |

| <u>NOx TPSD</u> | (See Figure 10) |             |             |             |             |             |             | Emissions        |                  | %Change             |  |
|-----------------|-----------------|-------------|-------------|-------------|-------------|-------------|-------------|------------------|------------------|---------------------|--|
|                 |                 |             |             |             |             |             |             | %Change          | Change           | SIP Base Yr         |  |
|                 | <u>1990</u>     | <u>1993</u> | <u>1996</u> | <u>1999</u> | <u>2002</u> | <u>2005</u> | <u>2008</u> | <u>1990-2008</u> | <u>1990-2008</u> | <u>2002 to 2008</u> |  |
| POINT           | 318             | 298         | 171         | 180         | 130         | 105         | 64          | -80%             | -254             | 50.9%               |  |
| AREA            | 33              | 36          | 46          | 33          | 39          | 42          | 27          | -18%             | -6               | 30.5%               |  |
| MOBILE          | 451             | 500         | 549         | 545         | 453         | 362         | 260         | -42%             | -191             | 42.7%               |  |
| OFF-ROAD        | 139             | 134         | 141         | 134         | 142         | 137         | 124         | -10%             | -15              | 12.9%               |  |
| TOTAL           | 941             | 968         | 907         | 893         | 764         | 646         | 475         | -50%             | -466             | 37.9%               |  |

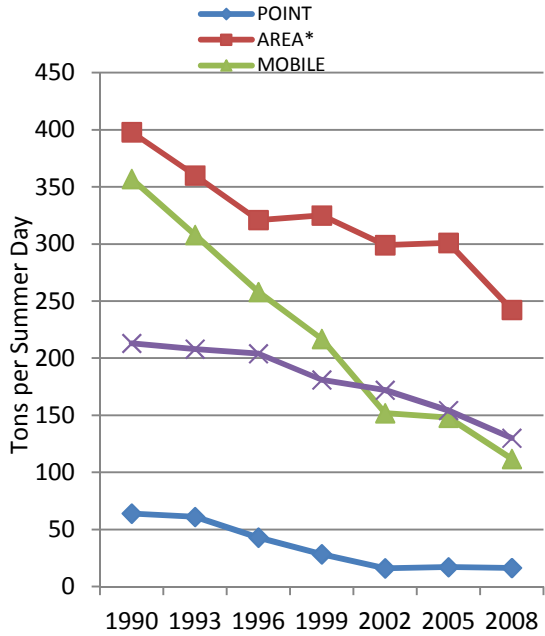
| <u>CO TPSD</u> | (See Figure 11) |             |             |             |             |             |             | Emissions        |                  | %Change             |  |
|----------------|-----------------|-------------|-------------|-------------|-------------|-------------|-------------|------------------|------------------|---------------------|--|
|                |                 |             |             |             |             |             |             | %Change          | Change           | SIP Base Yr         |  |
|                | <u>1990</u>     | <u>1993</u> | <u>1996</u> | <u>1999</u> | <u>2002</u> | <u>2005</u> | <u>2008</u> | <u>1990-2008</u> | <u>1990-2008</u> | <u>2002 to 2008</u> |  |
| POINT          | 40              | 29          | 40          | 35          | 33          | 43          | 28          | -31%             | -12              | 16.4%               |  |
| AREA           | 76              | 69          | 83          | 79          | 71          | 74          | 36          | -53%             | -40              | 49.3%               |  |
| MOBILE         | 4,712           | 3,496       | 3,209       | 2,891       | 2,163       | 1,619       | 864         | -82%             | -3848            | 60.1%               |  |
| OFF-ROAD       | 1,893           | 1,872       | 1,867       | 1,802       | 1,727       | 1,558       | 1,360       | -28%             | -533             | 21.3%               |  |
| TOTAL          | 6,721           | 5,466       | 5,199       | 4,807       | 3,994       | 3,294       | 2,288       | -66%             | -4434            | 42.7%               |  |

| <u>SO2 TPY</u> | (See Figure 12) |             |             |             |             |             |             | Emissions        |                  | %Change          |  |
|----------------|-----------------|-------------|-------------|-------------|-------------|-------------|-------------|------------------|------------------|------------------|--|
|                |                 |             |             |             |             |             |             | %Change          | Change           | %Change          |  |
|                | <u>1990</u>     | <u>1993</u> | <u>1996</u> | <u>1999</u> | <u>2002</u> | <u>2005</u> | <u>2008</u> | <u>1990-2008</u> | <u>1990-2008</u> | <u>2002-2008</u> |  |
| POINT          | 272,419         | 210,610     | 125,373     | 161,459     | 99,057      | 92,149      | 54,547      | -80%             | -217872          | 44.9%            |  |
| AREA           | 80,305          | 81,652      | 76,966      | 64,888      | 25,585      | 26,952      | 19,691      | -75%             | -60614           | 23.0%            |  |
| MOBILE         | 10,514          | 10,608      | 12,116      | 12,770      | 4,399       | 2,936       | 2,048       | -81%             | -8466            | 53.4%            |  |
| OFF-ROAD       | 4,658           | 4,943       | 5,284       | 5,740       | 4,262       | 4,521       | 2,561       | -45%             | -2097            | 39.9%            |  |
| TOTAL TPY      | 367,896         | 307,813     | 219,739     | 244,857     | 133,303     | 126,558     | 78,847      | -79%             | -289049          | 40.9%            |  |
| TOTAL TPD      | 1,007.9         | 843.3       | 602.0       | 670.8       | 365.2       | 346.7       | 216.0       | -79%             | -792             | 40.9%            |  |

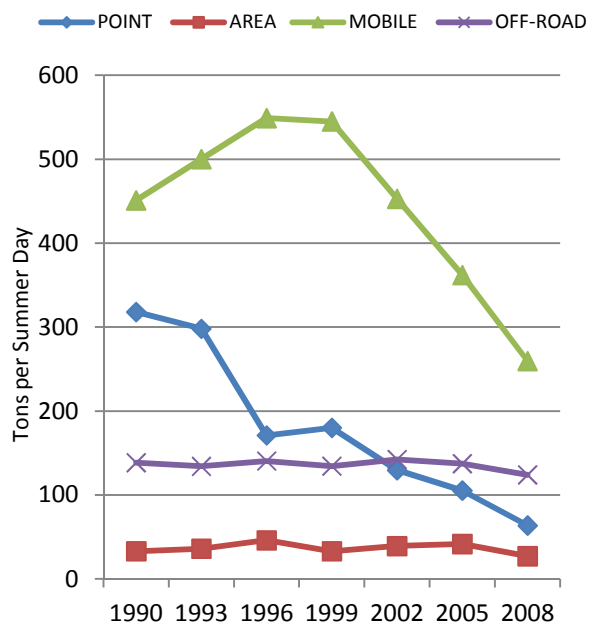
\*Emissions were re-adjusted for 2002 and 2005 based on 2008 updates in methods and emission factors (PFCs, Em Asphalt, Res Outdoor Wood -Total 28.6 TPSD)

\*\*Recreational Boats adjusted in 2008 due to better registration data - reducing emissions. Previous years adjusted also.

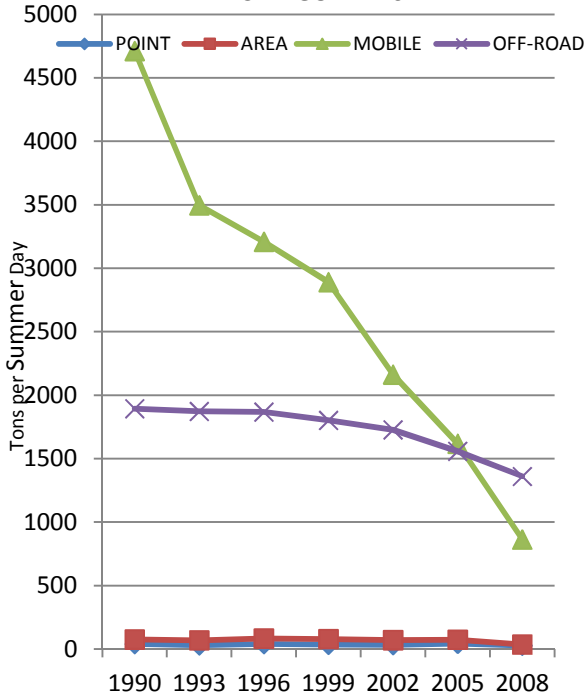
**FIGURE 9 VOC TRENDS 1990 TO 2008 BY CATEGORY TPSD**



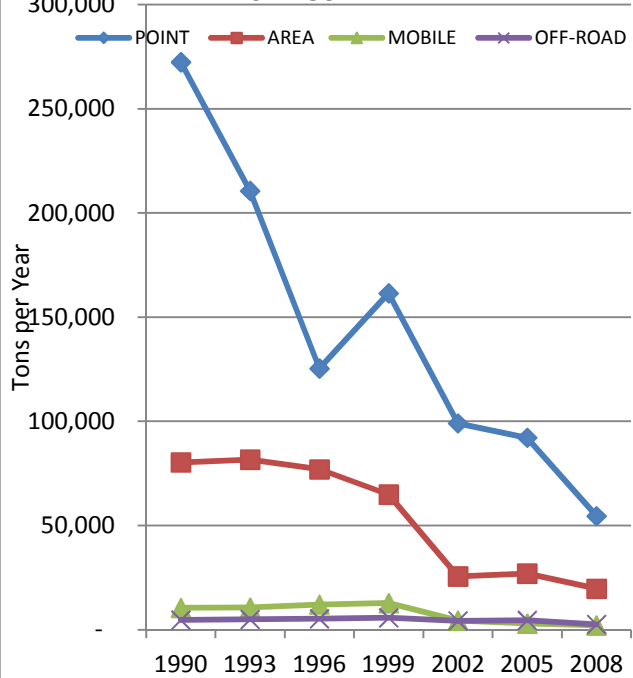
**FIGURE 10 NOx TRENDS 1990 TO 2008 BY CATEGORY TPSD**



**FIGURE 11 CO TRENDS 1990 TO 2008 BY CATEGORY TPSD**



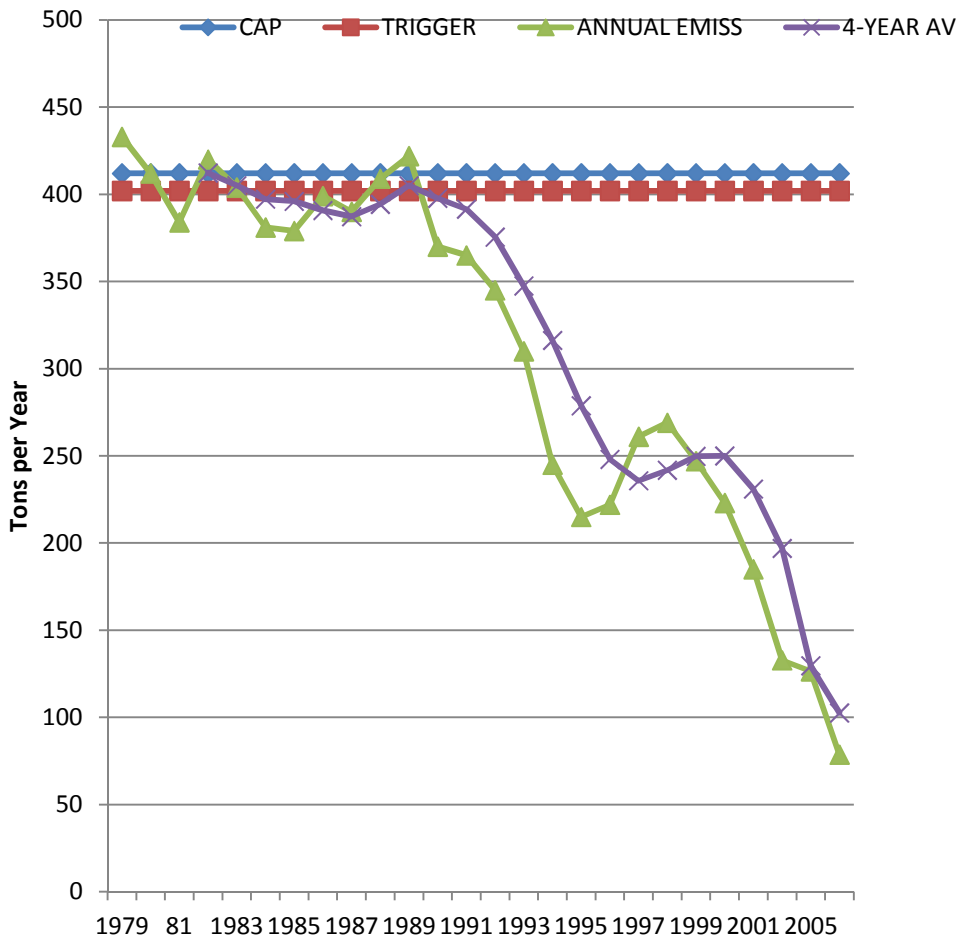
**FIGURE 12 SO2 TRENDS 1990 TO 2008 BY CATEGORY TPY**







**FIGURE 13: SO2 1979-2008 EMISSIONS WITH CAP & TRIGGER LEVELS**



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| <b>TABLE 6 EPA-NEI 2008 BIOGENIC EMISSIONS</b>                               |                           |                               |                                 |                            |                             |                             |
|--|---------------------------|-------------------------------|---------------------------------|----------------------------|-----------------------------|-----------------------------|
| ks/inv2008/Emiss Summary/ Section-1-2008-Summary-Charts-em-chart Oct-16 2012 |                           |                               |                                 |                            |                             |                             |
| <u>fips</u>  | <u>ctyfi</u><br><u>ps</u> | <u>county na</u><br><u>me</u> | <u>EI sector</u>                | <u>CO</u><br><u>ANNUAL</u> | <u>NO2</u><br><u>ANNUAL</u> | <u>VOC</u><br><u>ANNUAL</u> |
| 25001  | 1                         | Barnstable                    | Biogenics - Vegetation and soil | 478.0                      | 173.7                       | 3,061.3                     |
| 25003  | 3                         | Berkshire                     | Biogenics - Vegetation and soil | 1,328.9                    | 61.3                        | 5,601.9                     |
| 25005  | 5                         | Bristol                       | Biogenics - Vegetation and soil | 753.4                      | 75.2                        | 4,295.7                     |
| 25007  | 7                         | Dukes                         | Biogenics - Vegetation and soil | 113.2                      | 49.1                        | 475.2                       |
| 25009  | 9                         | Essex                         | Biogenics - Vegetation and soil | 660.1                      | 39.8                        | 3,786.3                     |
| 25011  | 11                        | Franklin                      | Biogenics - Vegetation and soil | 1,199.0                    | 63.8                        | 5,377.0                     |
| 25013  | 13                        | Hampden                       | Biogenics - Vegetation and soil | 958.3                      | 53.3                        | 4,895.0                     |
| 25015  | 15                        | Hampshire                     | Biogenics - Vegetation and soil | 925.6                      | 64.3                        | 3,865.6                     |
| 25017  | 17                        | Middlesex                     | Biogenics - Vegetation and soil | 1,157.6                    | 64.8                        | 6,583.1                     |
| 25019  | 19                        | Nantucket                     | Biogenics - Vegetation and soil | 46.7                       | 21.5                        | 158.8                       |
| 25021  | 21                        | Norfolk                       | Biogenics - Vegetation and soil | 594.2                      | 36.0                        | 3,189.5                     |
| 25023  | 23                        | Plymouth                      | Biogenics - Vegetation and soil | 926.7                      | 126.5                       | 5,433.5                     |
| 25025  | 25                        | Suffolk                       | Biogenics - Vegetation and soil | 114.1                      | 20.7                        | 522.5                       |
| 25027  | 27                        | Worcester                     | Biogenics - Vegetation and soil | 2,116.0                    | 105.4                       | 13,476.4                    |
|  |                           |                               |                                 | <b>11,371.6</b>            | <b>955.4</b>                | <b>60,721.8</b>             |
| <b>TABLE 7 TO ESTIMATE TONS PER SUMMER AND WINTER DAYS:</b>                  |                           |                               |                                 |                            |                             |                             |
|  |                           |                               | <u>MONTHS</u>                   | <u>CO</u>                  | <u>NO2</u>                  | <u>VOC</u>                  |
|  |                           | <i>January</i>                | 1                               | 120.0                      | 36.2                        | 273.5                       |
|  |                           | <i>February</i>               | 2                               | 111.3                      | 34.7                        | 255.2                       |
|  |                           |                               | 3                               | 147.1                      | 47.9                        | 350.8                       |
|  |                           |                               | 4                               | 713.0                      | 81.0                        | 3148.7                      |
|  |                           | <i>June</i>                   | 5                               | 1111.2                     | 94.4                        | 5758.3                      |
|  |                           | <i>July</i>                   | 6                               | 2021.0                     | 121.7                       | 12656.6                     |
|  |                           | <i>August</i>                 | 7                               | 2544.2                     | 140.9                       | 16521.5                     |
|  |                           |                               | SUMMER MONTHS /92 DAYS          | <b>61.7</b>                | <b>3.9</b>                  | <b>379.7</b>                |
|  |                           |                               | 8                               | 1955.1                     | 119.9                       | 11132.3                     |
|  |                           |                               | 9                               | 1521.2                     | 101.5                       | 6922.2                      |
|  |                           |                               | 10                              | 763.0                      | 77.1                        | 2855.0                      |
|  |                           |                               | 11                              | 225.2                      | 56.6                        | 533.9                       |
|  |                           | <i>December</i>               | 12                              | 139.2                      | 43.5                        | 313.8                       |
|  |                           |                               | <b>Massachusetts Total</b>      | <b>11371.6</b>             | <b>955.4</b>                | <b>60721.8</b>              |
|  |                           |                               | WINTER - Jan, Feb, Dec /90 DAYS | <b>4.1</b>                 |                             |                             |