

## **APPENDIX A**

### **CaRFG2 REFINERY EMISSIONS**

**1990 Versus 1999**

**Appendix A:**

**CaRFG2 Refinery Emissions by Air District**

**SCAQMD 1990-1999**  
CaRFG2 Refinery Emissions

| <b>CaRFG2 Refineries</b> | <b>ROG<br/>(TPY)</b> | <b>NO<sub>x</sub><br/>(TPY)</b> | <b>CO<br/>(TPY)</b> | <b>SO<sub>x</sub><br/>(TPY)</b> | <b>PM<sub>10</sub><br/>(TPY)</b> |
|--------------------------|----------------------|---------------------------------|---------------------|---------------------------------|----------------------------------|
| 1990                     | 8,939.1              | 10,977.5                        | 4,037.2             | 4,767.5                         | 2,057.2                          |
| 1999                     | 3,523.2              | 7,849.8                         | 5,215.8             | 7,505.4                         | 1,252.9                          |
| <b>EMISSION CHANGES</b>  | <b>-5,415.9</b>      | <b>-3,127.7</b>                 | <b>+1,178.6</b>     | <b>+2,737.9</b>                 | <b>-804.3</b>                    |

**BAAQMD 1990-1999**  
CaRFG2 Refinery Emissions

| <b>CaRFG2 Refineries</b> | <b>ROG<br/>(TPY)</b> | <b>NO<sub>x</sub><br/>(TPY)</b> | <b>CO<br/>(TPY)</b> | <b>SO<sub>x</sub><br/>(TPY)</b> | <b>PM<sub>10</sub><br/>(TPY)</b> |
|--------------------------|----------------------|---------------------------------|---------------------|---------------------------------|----------------------------------|
| 1990                     | 8,927.2              | 16,506.4                        | 3,499.4             | 17,248.2                        | 1,070.4                          |
| 1999                     | 6,859.5              | 12,919.3                        | 2,352.6             | 14,218.4                        | 928.1                            |
| <b>EMISSION CHANGES</b>  | <b>-2,067.7</b>      | <b>-3,587.1</b>                 | <b>-1,146.8</b>     | <b>-3,029.8</b>                 | <b>-142.3</b>                    |

**SJVUAPCD 1990-1999**  
CaRFG2 Refinery Emissions

| <b>CaRFG2 Refineries</b> | <b>ROG<br/>(TPY)</b> | <b>NO<sub>x</sub><br/>(TPY)</b> | <b>CO<br/>(TPY)</b> | <b>SO<sub>x</sub><br/>(TPY)</b> | <b>PM<sub>10</sub><br/>(TPY)</b> |
|--------------------------|----------------------|---------------------------------|---------------------|---------------------------------|----------------------------------|
| 1990                     | 642.3                | 1,993.7                         | 305.4               | 790.5                           | 40.4                             |
| 1999                     | 343.3                | 465.7                           | 202.7               | 435.8                           | 435.4                            |
| <b>EMISSION CHANGES</b>  | <b>-299.0</b>        | <b>-1,528.0</b>                 | <b>-102.7</b>       | <b>-354.7</b>                   | <b>+395.0</b>                    |

## CaRFG2 Emissions for Each Refinery SCAQMD

(Source: <http://www.arb.ca.gov/app/emsinv/facinfo/facinfo.php>)

### SCAQMD 1990 CaRFG2 Refinery Emissions

| CaRFG2 Refineries                                       | ROG<br>(TPY)   | NO <sub>x</sub><br>(TPY) | CO<br>(TPY)    | SO <sub>x</sub><br>(TPY) | PM <sub>10</sub><br>(TPY) |
|---|----------------|--------------------------|----------------|--------------------------|---------------------------|
| ARCO (BP)   | 2,264.1        | 2,102.2                  | 183.7          | 1,918.9                  | 500.8                     |
| Chevron   | 2,546.5        | 3,036.8                  | 2,414.3        | 832.3                    | 613.3                     |
| Mobil (Exxon-Mobil)                                     | 1,061.0        | 1,740.5                  | 559.4          | 255.7                    | 274.7                     |
| Texaco (Equilon)  | 1,268.7        | 1,699.4                  | 346.4          | 545.8                    | 129.1                     |
| Ultramar  | 349.0          | 332.7                    | 174.7          | 340.9                    | 163.3                     |
| Unocal (Phillips)<br>Wilmington/Carson*<br>(*1993 data) | 1,450.5        | 2,065.9                  | 358.7          | 873.4                    | 376.0                     |
| <b>TOTAL</b>  | <b>8,939.1</b> | <b>10,977.5</b>          | <b>4,037.2</b> | <b>4,767.5</b>           | <b>2,057.2</b>            |

### SCAQMD 1999 CaRFG2 Refinery Emissions

| CaRFG2 Refineries                      | ROG<br>(TPY)   | NO <sub>x</sub><br>(TPY) | CO<br>(TPY)    | SO <sub>x</sub><br>(TPY) | PM <sub>10</sub><br>(TPY) |
|--|----------------|--------------------------|----------------|--------------------------|---------------------------|
| ARCO (BP)                              | 472.0          | 1,484.0                  | 1,595.0        | 2,315.0                  | 310.5                     |
| Chevron                                | 806.2          | 1,650.0                  | 1,676.7        | 1,208.1                  | 227.3                     |
| Mobil (Exxon-Mobil)                    | 701.3          | 1,663.1                  | 869.3          | 1,017.5                  | 215.3                     |
| Texaco (Equilon)                       | 536.4          | 1,018.7                  | 175.7          | 952.9                    | 130.5                     |
| Ultramar                               | 208.3          | 329.2                    | 85.3           | 619.6                    | 152.6                     |
| Unocal (Phillips)<br>Wilmington/Carson | 799.0          | 1,704.8                  | 813.8          | 1,392.3                  | 216.7                     |
| <b>TOTAL</b>                           | <b>3,523.2</b> | <b>7,849.8</b>           | <b>5,215.8</b> | <b>7,505.4</b>           | <b>1,252.9</b>            |

### SCAQMD 1990-1999 CaRFG2 Refinery Emissions

| CaRFG2 Refineries       | ROG<br>(TPY)    | NO <sub>x</sub><br>(TPY) | CO<br>(TPY)     | SO <sub>x</sub><br>(TPY) | PM <sub>10</sub><br>(TPY) |
|-------------------------|-----------------|--------------------------|-----------------|--------------------------|---------------------------|
| 1990                    | 8,939.1         | 10,977.5                 | 4,037.2         | 4,767.5                  | 2,057.2                   |
| 1999                    | 3,523.2         | 7,849.8                  | 5,215.8         | 7,505.4                  | 1,252.9                   |
| <b>EMISSION CHANGES</b> | <b>-5,415.9</b> | <b>-3,127.7</b>          | <b>+1,178.6</b> | <b>+2,737.9</b>          | <b>-804.3</b>             |

**CaRFG2 Emissions for Each Refinery  
BAAQMD**

(Source: <http://www.arb.ca.gov/app/emsinv/facinfo/facinfo.php>)

**BAAQMD 1990  
CaRFG2 Refinery Emissions**

| <b>CaRFG2 Refineries</b> | <b>ROG<br/>(TPY)</b> | <b>NO<sub>x</sub><br/>(TPY)</b> | <b>CO<br/>(TPY)</b> | <b>SO<sub>x</sub><br/>(TPY)</b> | <b>PM<sub>10</sub><br/>(TPY)</b> |
|--------------------------|----------------------|---------------------------------|---------------------|---------------------------------|----------------------------------|
| Chevron                  | 3,120.3              | 4,733.6                         | 1,187.9             | 1,291.3                         | 280.8                            |
| Exxon (Valero)           | 1,082.7              | 2,975.1                         | 492.3               | 4,922.2                         | 181.0                            |
| Shell (Equilon)          | 2,276.3              | 4,403.2                         | 1,350.8             | 2,790.2                         | 294.4                            |
| Tosco (Ultramar)         | 1,666.6              | 2,952.1                         | 274.4               | 7,660.4                         | 254.0                            |
| Unocal (Phillips)        | 781.3                | 1,442.4                         | 194.0               | 584.1                           | 60.2                             |
| <b>TOTAL</b>             | <b>8,927.2</b>       | <b>16,506.4</b>                 | <b>3,499.4</b>      | <b>17,248.2</b>                 | <b>1,070.4</b>                   |

**BAAQMD 1999  
CaRFG2 Refinery Emissions**

| <b>CaRFG2 Refineries</b> | <b>ROG<br/>(TPY)</b> | <b>NO<sub>x</sub><br/>(TPY)</b> | <b>CO<br/>(TPY)</b> | <b>SO<sub>x</sub><br/>(TPY)</b> | <b>PM<sub>10</sub><br/>(TPY)</b> |
|--------------------------|----------------------|---------------------------------|---------------------|---------------------------------|----------------------------------|
| Chevron                  | 2,510.6              | 2,609.7                         | 437.9               | 1,243.9                         | 176.4                            |
| Exxon (Valero)           | 505.3                | 3,243.3                         | 538.9               | 5,778.6                         | 185.8                            |
| Shell (Equilon)          | 1,687.1              | 3,299.1                         | 807.6               | 1,158.7                         | 362.9                            |
| Tosco (Ultramar)         | 1,543.2              | 2,606.5                         | 346.2               | 5,422.7                         | 160.5                            |
| Unocal (Phillips)        | 613.3                | 1,160.7                         | 222.0               | 614.5                           | 42.5                             |
| <b>TOTAL</b>             | <b>6,859.5</b>       | <b>12,919.3</b>                 | <b>2,352.6</b>      | <b>14,218.4</b>                 | <b>928.1</b>                     |

**BAAQMD 1990-1999  
CaRFG2 Refinery Emissions**

| <b>CaRFG2 Refineries</b> | <b>ROG<br/>(TPY)</b> | <b>NO<sub>x</sub><br/>(TPY)</b> | <b>CO<br/>(TPY)</b> | <b>SO<sub>x</sub><br/>(TPY)</b> | <b>PM<sub>10</sub><br/>(TPY)</b> |
|--------------------------|----------------------|---------------------------------|---------------------|---------------------------------|----------------------------------|
| 1990                     | 8,927.2              | 16,506.4                        | 3,499.4             | 17,248.2                        | 1,070.4                          |
| 1999                     | 6,859.5              | 12,919.3                        | 2,352.6             | 14,218.4                        | 928.1                            |
| <b>EMISSION CHANGES</b>  | <b>-2,067.7</b>      | <b>-3,587.1</b>                 | <b>-1,146.8</b>     | <b>-3,029.8</b>                 | <b>-142.3</b>                    |

**CaRFG2 Emissions for Each Refinery  
SJVUAPCD**

(Source: <http://www.arb.ca.gov/app/emsinv/facinfo/facinfo.php>)

**SJVUAPCD 1990  
CaRFG2 Refinery Emissions**

| <b>CaRFG2 Refineries</b> | <b>ROG<br/>(TPY)</b> | <b>NO<sub>x</sub><br/>(TPY)</b> | <b>CO<br/>(TPY)</b> | <b>SO<sub>x</sub><br/>(TPY)</b> | <b>PM<sub>10</sub><br/>(TPY)</b> |
|--------------------------|----------------------|---------------------------------|---------------------|---------------------------------|----------------------------------|
| Texaco (Equilon)         | 474.4                | 1,774.8                         | 270.7               | 471.2                           | 27.1                             |
| Kern Oil                 | 167.9                | 218.9                           | 34.7                | 319.3                           | 13.3                             |
| <b>TOTAL</b>             | <b>642.3</b>         | <b>1,993.7</b>                  | <b>305.4</b>        | <b>790.5</b>                    | <b>40.4</b>                      |

**SJVUAPCD 1999  
CaRFG2 Refinery Emissions**

| <b>CaRFG2 Refineries</b> | <b>ROG<br/>(TPY)</b> | <b>NO<sub>x</sub><br/>(TPY)</b> | <b>CO<br/>(TPY)</b> | <b>SO<sub>x</sub><br/>(TPY)</b> | <b>PM<sub>10</sub><br/>(TPY)</b> |
|--------------------------|----------------------|---------------------------------|---------------------|---------------------------------|----------------------------------|
| Texaco (Equilon)         | 124.1                | 321.2                           | 119.0               | 72.3                            | 58.2                             |
| Kern Oil                 | 219.2                | 144.5                           | 83.7                | 363.5                           | 377.2                            |
| <b>TOTAL</b>             | <b>343.3</b>         | <b>465.7</b>                    | <b>202.7</b>        | <b>435.8</b>                    | <b>435.4</b>                     |

**SJVUAPCD 1990-1999  
CaRFG2 Refinery Emissions**

| <b>CaRFG2 Refineries</b> | <b>ROG<br/>(TPY)</b> | <b>NO<sub>x</sub><br/>(TPY)</b> | <b>CO<br/>(TPY)</b> | <b>SO<sub>x</sub><br/>(TPY)</b> | <b>PM<sub>10</sub><br/>(TPY)</b> |
|--------------------------|----------------------|---------------------------------|---------------------|---------------------------------|----------------------------------|
| 1990                     | 642.3                | 1,993.7                         | 305.4               | 790.5                           | 40.4                             |
| 1999                     | 343.3                | 465.7                           | 202.7               | 435.8                           | 435.4                            |
| <b>EMISSION CHANGES</b>  | <b>-299.0</b>        | <b>-1,528.0</b>                 | <b>-102.7</b>       | <b>-354.7</b>                   | <b>+395.0</b>                    |