Distribution of 2005 Annual Average Emissions

**ROG: 393 tpd**

- Consumer Products: 3%
- On-Road (cars, trucks, etc.): 27%
- Off-Road (construction, ships, trains, etc.): 20%
- Evaporation (paints, fuels, solvents): 8%
- Refinery (processes and combustion): 15%
- Other Industrial / Commercial: 5%
- Combustion (residential): 22%
- Combustion (industrial): 1%

**PM2.5: 86 tpd**

- Consumer Products: 8%
- On-Road (cars, trucks, etc.): 15%
- Off-Road (construction, ships, trains, etc.): 22%
- Evaporation (paints, fuels, solvents): 5%
- Refinery (processes and combustion): 20%
- Other Industrial / Commercial: 3%
- Combustion (residential): 1%
- Combustion (industrial): 1%

**NOx: 521 tpd**

- Consumer Products: 3%
- On-Road (cars, trucks, etc.): 42%
- Off-Road (construction, ships, trains, etc.): 3%
- Evaporation (paints, fuels, solvents): 6%
- Refinery (processes and combustion): 47%
- Other Industrial / Commercial: 46%
- Combustion (residential): 1%
- Combustion (industrial): 3%

**SO2: 68 tpd**

- Consumer Products: 3%
- On-Road (cars, trucks, etc.): 5%
- Off-Road (construction, ships, trains, etc.): 1%
- Evaporation (paints, fuels, solvents): 4%
- Refinery (processes and combustion): 10%
- Other Industrial / Commercial: 34%
- Combustion (residential): 10%
- Combustion (industrial): 15%

---

Bay Area Emissions Trends
Stationary Source Committee Meeting

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All Sources
Emission Trends 1980-2010

ROG (tpd)


Consumer Products
On-Road
Off-Road
Evaporation
Re refinery
Other Industrial
Combustion

NOx (tpd)


PM2.5 (tpd)


SO2 (tpd)


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Stationary Source Emission Trends 1980-2010

- **ROG (tpd)**
  - Other Combustion
  - Power Plants & Cogeneration
  - Evaporation
  - Domestic Combustion

- **NOx (tpd)**
  - Other Industrial / Commercial
  - Refinery
  - Commercial Cooking

- **PM2.5 (tpd)**

- **SO2 (tpd)**

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Refinery Emission Trends 1980-2010

- **ROG (tpd)**
- **PM2.5 (tpd)**
- **NOx (tpd)**
- **SO2 (tpd)**
Power Plants & Cogeneration
Emission Trends 1980-2010

- ROG (tpd)
- NOx (tpd)
- PM2.5 (tpd)
- SO2 (tpd)

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## Emission Reductions from Adopted Control Measures 1992-2008

<table>
<thead>
<tr>
<th>Category</th>
<th>Rule(s)</th>
<th>Description</th>
<th>Dates</th>
<th>ROG</th>
<th>NOX</th>
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<tbody>
<tr>
<td>Surface Coating &amp; Solvent Use</td>
<td>8-51</td>
<td>Adhesives</td>
<td>Nov 92 / Jun 96</td>
<td>19.0</td>
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<td></td>
<td>8-3</td>
<td>Architectural Coatings</td>
<td>Nov 01 / Dec 08</td>
<td>9.2</td>
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<td>8-32</td>
<td>Wood Furniture and Cabinet Coatings</td>
<td>Nov 95</td>
<td>6.2</td>
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<td>8-16, 20, 46</td>
<td>Solvents Used for Surface Preparation / Clean-up of Solvents</td>
<td>Oct 01</td>
<td>5.1</td>
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<tr>
<td></td>
<td>8-45</td>
<td>Automotive Refinishing</td>
<td>Dec 98</td>
<td>3.7</td>
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<td>All Others</td>
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<td><strong>Subtotal</strong></td>
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<td>Fuels / Organic Liquids Storage &amp; Distribution</td>
<td>8-7</td>
<td>Gasoline Dispensing Facilities</td>
<td>Nov 99</td>
<td>3.8</td>
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<td>8-5</td>
<td>Storage of Organic Liquids</td>
<td>Jan 93 / Dec 99</td>
<td>3.5</td>
<td>0</td>
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<td>All Others</td>
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<td><strong>Subtotal</strong></td>
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<td>Refinery &amp; Chemical Plant Processing</td>
<td>8-18, 22, 25</td>
<td>Pumps, Valves, Flanges &amp; Compressor Seals</td>
<td>Mar 92</td>
<td>6.5</td>
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<td>8-8</td>
<td>Refinery Waste Water (Oil-Water) Separators</td>
<td>Sep 04</td>
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<tr>
<td></td>
<td>12-11, 12</td>
<td>Flare Monitoring &amp; Minimization*</td>
<td>Jun 03 / Jul 05 / Apr 06</td>
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<td>Other Control Measures</td>
<td>8-40</td>
<td>Prohibit Aeration of Petroleum Contaminated Soils</td>
<td>Dec 99</td>
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<tr>
<td>Combustion of Fuels</td>
<td>9-7, 10</td>
<td>Boilers, Steam Generators &amp; Process Heaters</td>
<td>Jan 94 / Sep 92</td>
<td>0</td>
<td>35.9</td>
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<td>9-8</td>
<td>Internal Combustion Engines</td>
<td>Jan 93 / Jul 07</td>
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<td>27.5</td>
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<td>9-11</td>
<td>Electric Power Generating Boilers</td>
<td>Feb 94</td>
<td>0</td>
<td>17.5</td>
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<td>9-9</td>
<td>Control of Emissions from Stationary Gas Turbines</td>
<td>May 93</td>
<td>0</td>
<td>7.0</td>
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<td>0</td>
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<td><strong>93.6</strong></td>
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<td><strong>TOTAL</strong></td>
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<td><strong>69.9</strong></td>
<td><strong>93.6</strong></td>
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* SO2 emission reduction for flares was 0.9 tpd
Emission Reductions from Adopted Control Measures 1992-2008

ROG

- Solvents: 69.3 tpd
- Fuels: 10.1
- Refineries & Chemical Plants: 8.0
- Other: 2.7

NOx

- Boilers, Steam Generators & Heaters: 35.9
- Stationary IC Engines: 27.5
- Electric Power Generating Boilers: 17.5
- Turbines: 5.7
- All Others Combustion Sources: 7.0

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Bay Area Air Quality Management District
Bay Area Emissions Trends
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Trends in Air Quality Monitoring Data

Excesses of Ozone Standards

<table>
<thead>
<tr>
<th>Year</th>
<th>State 1-hour Std</th>
<th>Fed 8-hour Std</th>
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<td>1968</td>
<td>88</td>
<td>57</td>
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<td>2009</td>
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Cancer Risk

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<tr>
<th>Year</th>
<th>Diesel</th>
<th>Benzene</th>
<th>1,3-butadiene</th>
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<tr>
<td>1990</td>
<td>1310</td>
<td></td>
<td></td>
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<tr>
<td>2006</td>
<td></td>
<td>410</td>
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