Updated 1-Hour Ozone Attainment Demonstration

Public Workshop
September 20, 2018

South Coast Air Quality Management District
21865 Copley Dr
Diamond Bar, CA 91765
2016 Air Quality Management Plan (AQMP)

• Adopted by SCAQMD’s Governing Board in March 2017

• 2016 AQMP addressed five National Ambient Air Quality Standards (NAAQS) exceeded in South Coast Air Basin:
  • 2008 8-hour Ozone - 75 ppb
  • 1997 8-hour Ozone - 80 ppb
  • 1979 1-hour Ozone - 120 ppb
  • 2012 Annual PM2.5 - 12 µg/m3
  • 2006 24-hour PM2.5 - 35 µg/m3
### South Coast Ozone and PM$_{2.5}$ Air Quality Standards and Classifications

<table>
<thead>
<tr>
<th>Standard</th>
<th>Concentration</th>
<th>Classification</th>
<th>Attainment Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008 8-hour Ozone</td>
<td>75 ppb</td>
<td>Extreme</td>
<td>2031</td>
</tr>
<tr>
<td>2012 Annual PM2.5</td>
<td>12 µg/m³</td>
<td>Moderate/Serious</td>
<td>2021/2025</td>
</tr>
<tr>
<td>2006 24-hour PM2.5</td>
<td>35 µg/m³</td>
<td>Serious</td>
<td>2019</td>
</tr>
<tr>
<td>1997 8-hour Ozone</td>
<td>80 ppb</td>
<td>Extreme</td>
<td>2023</td>
</tr>
<tr>
<td>1979 1-hour Ozone</td>
<td>120 ppb</td>
<td>Extreme</td>
<td>2022</td>
</tr>
</tbody>
</table>
Attainment Demonstration

• South Coast Air Basin is currently classified as non-attainment of the 1979 1-hour ozone standard
  – Must show attainment by 2/26/2023
  – All the required emission reductions need to be in place by 12/31/2022

• The level of emissions under the ‘business-as-usual’ scenario is not low enough to show attainment by 2022

• Additional emission reductions were estimated from potential control measures to show attainment in 2022

• The attainment demonstration is the modeling and technical analysis required by EPA to show how the standard will be attained
1-hour Ozone Attainment Demonstration in 2016 AQMP

• Emissions inventory based on the version released by CARB to the District in October 2016

• Attainment strategy based on control measures developed for attainment of the 1979 8-hour ozone standard, with attainment deadline of 2023

• Control Strategy
  – SCAQMD’s Stationary and Mobile Source Control Measures
  – CARB’s 2016 SIP strategy
    • Defined measures (regulatory and incentive-based)
    • Undefined measures ("Further Deployment of Cleaner Technologies") allowed under the CAA Section 182(e)(5)
Reasons for Updating the 1-hour Ozone Attainment Demonstration

• Consistency with the final 2016 AQMP emissions inventory released by CARB to the District in November 2016 (used in 8-hour ozone and PM2.5 attainment demonstrations)

• To address the CAA requirements for undefined measures
  – If attainment demonstration relies on 182(e)(5) measures, the State needs to submit enforceable commitments to develop and adopt contingency measures if the anticipated technologies do not achieve planned reductions
  – Such contingency measures are required to be submitted to EPA no later than 3 years before attainment deadline, January 1st, 2019
Updates Incorporated in New 1-hour Ozone Attainment Demonstration

• Emissions Inventory
  – Updated to be consistent with the final emissions inventory included in 2016 AQMP

• Attainment Strategy
  – Removed CARB’s SIP strategies including both defined measures and undefined 182(e)(5) measures – reductions no longer needed
  – Included SCAQMD’s stationary and mobile source measures only

• Air Quality Modeling
  – Reflect updated emissions inventory and attainment strategy
### Updated Baseline Inventories

<table>
<thead>
<tr>
<th></th>
<th>Year 2012</th>
<th>Year 2022</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Annual Average (tons/day)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VOC</td>
<td>470.20</td>
<td>470.11</td>
</tr>
<tr>
<td>NOX</td>
<td>541.37</td>
<td>539.81</td>
</tr>
<tr>
<td><strong>Summer Planning (tons/day)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VOC</td>
<td>499.72</td>
<td>499.63</td>
</tr>
<tr>
<td>NOX</td>
<td>523.97</td>
<td>522.40</td>
</tr>
</tbody>
</table>

- The final version of the emission inventory in 2016 AQMP (Nov 2016) included 7.5 tons per day of less NOX emissions in 2022 compared to Oct 2016 version; VOCs similar in both versions.
Updated Attainment Strategy

- Relies on SCAQMD’s stationary and mobile source measures only
  - 86% of 2023 emission reductions from SCAQMD’s control measures assumed for 2022.

- Removed CARB’s SIP strategy measures
  - CARB’s defined measures (i.e., small off-road engines)
  - CARB’s 182(e)(5) measures - “Further Deployment of Cleaner Technologies”
    - Eliminates need for 182(e)(5) contingency measures
## SCAQMD Measures with Full Implementation by 2022

<table>
<thead>
<tr>
<th>Control Measure</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMB-02</td>
<td>Emission reductions from replacement with zero or near-zero NOx appliances in commercial and residential applications</td>
</tr>
<tr>
<td>CMB-03</td>
<td>Emission Reductions from non-refinery Flares</td>
</tr>
<tr>
<td>CMB-04</td>
<td>Emission reductions from restaurant burners and residential cooking</td>
</tr>
<tr>
<td>FUG-01</td>
<td>Improved leak detection and repair</td>
</tr>
<tr>
<td>CTS-01</td>
<td>Further emission reductions from coatings, solvents, adhesives, and sealants</td>
</tr>
<tr>
<td>BCM-10</td>
<td>Emission reductions from greenwaste composting</td>
</tr>
<tr>
<td>MOB-10</td>
<td>Extension of the SOON provision for construction/industrial equipment</td>
</tr>
</tbody>
</table>
## SCAQMD Measures with full Implementation by 2023

<table>
<thead>
<tr>
<th>Control Measure</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECC-02</td>
<td>Co-Benefits from existing residential and commercial building energy efficiency measures</td>
</tr>
<tr>
<td>ECC-03</td>
<td>Additional enhancements in reducing existing residential building energy use</td>
</tr>
<tr>
<td>CMB-01</td>
<td>Transition to zero and near-zero emission technologies for stationary sources</td>
</tr>
<tr>
<td>MOB-11</td>
<td>Extended exchange program</td>
</tr>
<tr>
<td>MOB-14</td>
<td>Emission reductions from incentive programs</td>
</tr>
</tbody>
</table>
## Anticipated Emission Reductions for SCAQMD Measures

<table>
<thead>
<tr>
<th>Implementation</th>
<th>Measure</th>
<th>VOC (tpd)</th>
<th>NOX (tpd)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020</td>
<td>CMB-02</td>
<td></td>
<td>1.0</td>
</tr>
<tr>
<td></td>
<td>CMB-03</td>
<td>0.4</td>
<td>1.4</td>
</tr>
<tr>
<td></td>
<td>BCM-10</td>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CTS-01</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>2022</td>
<td>CMB-04</td>
<td></td>
<td>0.8</td>
</tr>
<tr>
<td></td>
<td>FUG-01</td>
<td>2.0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MOB-10</td>
<td></td>
<td>2.0</td>
</tr>
<tr>
<td>2023*</td>
<td>MOB-11</td>
<td></td>
<td>2.5</td>
</tr>
<tr>
<td></td>
<td>MOB-14</td>
<td></td>
<td>9.5</td>
</tr>
<tr>
<td></td>
<td>ECC-02</td>
<td>0.1</td>
<td>0.3</td>
</tr>
<tr>
<td></td>
<td>ECC-03</td>
<td>0.1</td>
<td>1.0</td>
</tr>
<tr>
<td></td>
<td>CMB-01</td>
<td>1.0</td>
<td>2.1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>6.1</td>
<td>20.6</td>
</tr>
</tbody>
</table>

*86 percent of 2023 reductions assumed for 2022.
Updated Air Quality Modeling

• Modeling platform is identical to the one used in 2016 AQMP for 8-hour ozone standards

• Performance evaluation of 2012 base year in the 2016 AQMP is still valid and it is not revised. Evaluation includes:
  – Meteorological modeling
  – Ozone modeling
  – Ozone episode analysis
  – 1-hour ozone demonstration methodology
  – 1-hour ozone isopleths
## Future 1-Hour Ozone Design Values

<table>
<thead>
<tr>
<th>Station</th>
<th>2012 5-Year Weighted Design Value</th>
<th>2016 AQMP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>2022</td>
</tr>
<tr>
<td>Azusa</td>
<td>112</td>
<td>104</td>
</tr>
<tr>
<td>Crestline</td>
<td>132</td>
<td>120</td>
</tr>
<tr>
<td>Fontana</td>
<td>138</td>
<td>125</td>
</tr>
<tr>
<td>Glendora</td>
<td>132</td>
<td>121</td>
</tr>
<tr>
<td>Lake Elsinore</td>
<td>108</td>
<td>93</td>
</tr>
<tr>
<td>Perris</td>
<td>114</td>
<td>108</td>
</tr>
<tr>
<td>Pomona</td>
<td>117</td>
<td>103</td>
</tr>
<tr>
<td>Redlands</td>
<td>133</td>
<td>120</td>
</tr>
<tr>
<td>Reseda</td>
<td>125</td>
<td>105</td>
</tr>
<tr>
<td>Riverside</td>
<td>124</td>
<td>109</td>
</tr>
<tr>
<td>San Bernardino</td>
<td>123</td>
<td>107</td>
</tr>
<tr>
<td>Santa Clarita</td>
<td>132</td>
<td>110</td>
</tr>
<tr>
<td>Upland</td>
<td>135</td>
<td>122</td>
</tr>
</tbody>
</table>
Spatial Projections of 1-hour Ozone Design Values

2012 Observed 5-Year 1-hr O3 DV

2022 Predicted Baseline 1-hr O3 DV
Spatial Projections of 1-hour Ozone Design Values

2022 Predicted Baseline 1-hr O3 DV

2022 Predicted Controlled 1-hr O3 DV
### Sensitivity Analysis for Weight of Evidence

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Measures Included</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sensitivity</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Case 1</strong></td>
<td>Attainment demonstration + concurrent VOC emission reductions from measures MOB-10, MOB-11, MOB-14, CMB-02 and CMB-04</td>
</tr>
<tr>
<td><strong>Case 2</strong></td>
<td>Sensitivity Case 1 + CARB’s Proposed Measure for Small Off-Road Engines</td>
</tr>
<tr>
<td><strong>Case 3</strong></td>
<td>Control Measure MOB14 (existing mobile source incentive projects only) + Control Measure MOB11 (extended exchange program for lawn and garden equipment)</td>
</tr>
<tr>
<td><strong>Case 4</strong></td>
<td>Measures listed in Sensitivity Case 1 + CARB’s control measures for Locomotives and OGV At-Berth</td>
</tr>
</tbody>
</table>
## Concurrent VOC Reductions not Included in Attainment Demonstration (Case 1)

<table>
<thead>
<tr>
<th>Implementation</th>
<th>Measure</th>
<th>VOC (tpd)</th>
<th>NOX (tpd)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020</td>
<td>CMB-02</td>
<td>0.1*</td>
<td>1.0</td>
</tr>
<tr>
<td></td>
<td>CMB-03</td>
<td>0.4</td>
<td>1.4</td>
</tr>
<tr>
<td></td>
<td>BCM-10</td>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CTS-01</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>2022</td>
<td>CMB-04</td>
<td>0.1*</td>
<td>0.8</td>
</tr>
<tr>
<td></td>
<td>FUG-01</td>
<td>2.0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MOB-10</td>
<td>0.2*</td>
<td>2.0</td>
</tr>
<tr>
<td>2023*</td>
<td>MOB-11</td>
<td>5.0*</td>
<td>2.5</td>
</tr>
<tr>
<td></td>
<td>MOB-14</td>
<td>0.7*</td>
<td>9.5</td>
</tr>
<tr>
<td></td>
<td>ECC-02</td>
<td>0.1</td>
<td>0.3</td>
</tr>
<tr>
<td></td>
<td>ECC-03</td>
<td>0.1</td>
<td>1.0</td>
</tr>
<tr>
<td></td>
<td>CMB-01</td>
<td>1.0</td>
<td>2.1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>12.2</strong></td>
<td><strong>20.6</strong></td>
</tr>
</tbody>
</table>

*86 percent of 2023 reductions assumed for 2022

*Concurrent VOC emission reductions not included in attainment demonstration due to uncertainties in estimating the emissions.
## Design Value Sensitivity to Emission Reductions

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Emission Reductions</th>
<th>Design Value</th>
<th>1-h O₃ Reduction per ton (ppb/ton)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>VOC (tpd)</td>
<td>NOX (tpd)</td>
<td></td>
</tr>
<tr>
<td><strong>Attainment Demonstration</strong></td>
<td>6.1</td>
<td>20.6</td>
<td>123.5</td>
</tr>
<tr>
<td><strong>Sensitivity case 1</strong></td>
<td>12.2</td>
<td>20.6</td>
<td>123.0</td>
</tr>
<tr>
<td><strong>Sensitivity case 2</strong></td>
<td>15.7</td>
<td>20.9</td>
<td>122.6</td>
</tr>
<tr>
<td><strong>Sensitivity case 3</strong></td>
<td>5.5</td>
<td>7.3</td>
<td>124.5</td>
</tr>
<tr>
<td><strong>Sensitivity case 4</strong></td>
<td>15.9</td>
<td>25.4</td>
<td>122.4</td>
</tr>
</tbody>
</table>
Summary

• The updated analysis successfully demonstrates and reaffirms attainment of the 1-hour ozone standard by 2022

• The emissions inventory is updated to be consistent with the final emissions inventory used for the 8-hour ozone and PM2.5 standards attainment demonstrations included in the 2016 AQMP

• The attainment demonstration relies only on SCAQMD’s stationary and mobile source measures

• Emission reductions from CARB’s SIP strategies including both defined and undefined measures are no longer needed in this updated attainment demonstration
Next Steps

• Comments Due - October 8, 2018
• SCAQMD Mobile Source Committee Presentation – October 19, 2018
• SCAQMD’s Governing Board Public Hearing - November 2, 2018
• CARB’s Governing Board meeting - December 13-14, 2018
• Submittal to U.S. EPA - By end of December 2018
Public Comments

The public is requested to provide comments, documents, or other information relevant to the draft updated 1-hour attainment demonstration by Oct, 8 2018 by email or mail to:

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(909) 396-2431