2012 Future Case
HGB SIP Modeling

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2012 Future Case HGB SIP Modeling

Emission Inventory Development

Relative Reduction Factor Development

Future Ozone Design Value Projection
2012 Future Year Emissions by Source Category in the 8-County HGB Nonattainment Area

• Point Source Emissions of EGUs and NEGU were assumed to be the same as for 2009;

• On-Road Mobile Sources were reduced as per the changes in vehicles and fuels projected to 2012;

• Non-Road Mobile Sources were reduced as per the changes in engines and fuels projected to 2012;

• Ships were assumed to be the same as for 2009; and

• Area Sources were increased to account for growth between 2009 and 2012
Modeled NOx Emissions

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Modeled VOC Emissions

- BaseCase
- BaseLine
- Future2009
- Future2012

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NOx Emission Changes in the 8-County HGB Non-attainment Area

On-Road Mobile source NOx emissions were reduced by ~26% (152 -> 113 tpd) from the 2009 level;

Non-Road Mobile source NOx emissions were reduced by ~15% (46.2 -> 39.3 tpd) from the 2009 level; and

The increase in Area Sources was ~4% (45.1 -> 46.8 tpd).

Taking into account the magnitude of the point sources which remained unchanged, the net NOx emission decrease was ~10% (453 -> 409 tpd)
VOC Changes in the 8-County HGB Non-attainment Area

On-Road Mobile source VOC emissions were reduced by ~19% (77.9 -> 62.9 tpd) from the 2009 level;

Non-Road Mobile Source VOC emissions were reduced by ~8% (41.6 -> 38.2 tpd) from the 2009; and

The increase in Area Source VOC was ~5% (286 -> 301 tpd).

Taking into account the magnitude of the point sources which remained unchanged and the magnitude of the area sources which increased, the net VOC emission decrease was ~0.5% (640 -> 637 tpd)

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RRF Development & DVf Calculation

• Using these projected 2012 Emissions the CAMx Model was executed.

• The resulting 8-Hour ozone modeled concentrations at the various monitoring sites were compared to the Baseline (2000) modeled results, as per the EPA Guidance to develop a Relative Reduction Factor (RRF) at each of the various monitoring sites.

• These RRFs were then multiplied by the Current Ozone Design Values (DVc’s) to calculate the 2012 Future Ozone Design Values (DVf’s).

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Summary of Results

The 2012 DVf’s are lower than the 2009 DVf’s at each of the monitoring sites.  

- Three more monitoring sites are projected to come into Attainment in 2012 leaving only five sites in non-attainment:

<table>
<thead>
<tr>
<th>Site</th>
<th>2009</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deer Park</td>
<td>97ppb</td>
<td>95ppb</td>
</tr>
<tr>
<td>Bayland Park</td>
<td>95ppb</td>
<td>92ppb</td>
</tr>
<tr>
<td>Aldine</td>
<td>93ppb</td>
<td>90ppb</td>
</tr>
<tr>
<td>Croquet</td>
<td>88ppb</td>
<td>86ppb</td>
</tr>
<tr>
<td>HRM-8</td>
<td>86ppb</td>
<td>84ppb*</td>
</tr>
<tr>
<td>Houston East</td>
<td>90ppb</td>
<td>88ppb</td>
</tr>
<tr>
<td>Houston NW</td>
<td>87ppb</td>
<td>83ppb*</td>
</tr>
<tr>
<td>Region Office</td>
<td>85ppb</td>
<td>83ppb*</td>
</tr>
<tr>
<td>Shell West</td>
<td>86ppb</td>
<td>82ppb*</td>
</tr>
</tbody>
</table>

* Projected attainment

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Summary of Results

The modeling projects large reductions in the area with 8-hour ozone exceedances in 2009 & 2012.

Sept 5\textsuperscript{th} has the largest area with 8-hour ozone > 84ppb in 2009 (3776KM\textsuperscript{2}) & in 2012 (2688KM\textsuperscript{2}).

The average projected percent reduction in the exceedance area from the 2000 baseline (B2000c) for 2009 is 80% & for 2012 is 87%.