HGB SIP Modeling Update

Second Interim 2005 Episode Modeling

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### CAMx Ozone Modeling in SIP Development

**The Big Picture**

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<th>Case</th>
<th>Description</th>
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<td>Base Case</td>
<td>Day-specific meteorology and emissions; replicate what actually happened</td>
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<tr>
<td>Baseline Case</td>
<td>Day-specific meteorology and Typical emissions; used in RRF to predict future design values</td>
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<tr>
<td>Future Base Case</td>
<td>Apply future growth + on-the-books controls to estimate future ozone</td>
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<tr>
<td>Control Strategy Testing</td>
<td>Determine control strategies that will effectively reduce ozone</td>
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<td>SIP</td>
<td>Document modeling procedures</td>
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CAMx Ozone Modeling in SIP Development

Base Case – Historical Episode Replication

**Meteorological Modeling**
- Winds, Mixing Depth, Temperature, etc.

**Emissions Modeling**
- VOC, CO & NO\(_x\)
- Point, Area, on- & Non-Road & Biogenic

**CAMx Modeling**
- \(O_3, NO_x, VOC, CO, etc.\)
- Chemical Mechanism (CBIV, CB05), “Mixing” schemes

**Evaluate CAMx Performance**
- *(How well does the model replicate the episode?)*
- Bias, Time Series, Contour Plots

**Suitable Base Case**
Second Interim 2005 Episode Modeling

- Second Interim Met Modeling for the 2005 Episodes

- Second Interim EI Modeling for the 2005 Episodes

- Other Inputs for the 2005 Episode Modeling
Second Interim Met Modeling for 2005 Episodes

Met updates and evaluations currently underway:

- Update the surface characteristics with new UT-CSR land use/land cover (LU/LC) data
- Evaluate and select TAMU or STI-TCEQ observation-nudging data
- Evaluate and select UH-SST or TCEQ-SST hourly sea surface temperatures

(Note: A new monitored vs modeled wind trajectory analysis has been developed for additional evaluation of the met-modeling)
Second Interim EI Modeling for 2005 Episodes

The following modeling EI updates and evaluations are currently underway:

- Update the episode-specific point sources with the new tank landing loss emissions data
- Adjust the VOC to include ethane, which is a CB05 species
- Complete the CCEDS sensitivity analysis
- Complete the ISC/PSCF EI-reconciliation (extra-alkenes)
- Evaluate episode-specific wildfire emissions (TFS vs MODIS)
- Compile 2005 baseline modeling emissions
Other Inputs for the Second interim 2005 Episode Modeling

Development of episode-specific boundary conditions

• Boundary conditions extracted from the GEOS-CHEM model output

• Boundary conditions extracted from CENRAP model output which uses boundary conditions extracted from the GEOS-CHEM model output.