PM$_{10}$ Hot-spot
Interagency Consultation

July 24, 2014
Agenda

- Welcome and Introductions
- Review of activities since May 20 meeting
- Interagency consultation topics
  - Meteorological data
  - Receptor locations
  - Analysis locations
  - Background value calculation
Activities since May 20 meeting

- Submitted Air Quality Report to EPA June 2
- Ongoing comment/response between FHWA and EPA
- Comment resolution conference calls June 17 and July 15
- Focus of comments has been – construction duration, met-data, receptor locations, analysis locations, and background value
- Formal comments expected week of August 4
Meteorological data

- Met-data for MOVES modeling was obtained from MAG and is consistent with regional PM$_{10}$ conformity analysis
- Met-data for CAL3QHCR modeling was purchased from Lakes Environmental by ADOT
  - The data origin is the MM5 mesoscale meteorological model
Section 7.6.2:
“... receptors should be placed with finer spacing (e.g., 25 meters) closer to a near-ground source, and with wider spacing (e.g., 100 meters) farther from such a source.... Receptors should be sited as near as five meters from a source (e.g., the edge of a traffic lane or a source in a terminal)....”

- The first row of receptors is on the right-of-way line and spaced at 25 meters along the right-of-way line.
- The 2nd row is 25 meters from the first row with 25 meter spacing between receptors.
- Wider spacing (50 meters) is then used for additional rows up to 200 meters away. Analysis confirms that concentrations decrease beyond XXX meter mark.
Analysis locations

- Section 3.3.2:
  “... if a highway project involves several lane miles with similar travel activity (and no nearby sources that need to be modeled), the scope of the PM hot-spot analysis could involve only the point(s) of highest expected PM concentrations. If conformity requirements are met at such locations, then it can be assumed that conformity is met throughout the project area. “

- The I-10 (Papago) interchange location will be used to demonstrate conformity for the project.

- Additional locations (Broadway Road and 40th Street) will be analyzed at the team’s discretion in the context of the NEPA process to address public concerns.
Background value calculation

- Using a Single Monitor:
  
  “In most cases, the simplest approach will be to use data from the monitor closest to and upwind of the project area. However, all of the following factors need to be evaluated when considering monitors for use of their data as representative background concentrations:

  • Similar characteristics between the monitor location and project area
  • Distance of monitor from the project area:
    “Monitors closer to the project may have concentrations most similar to the project area. If more than one such monitor is available, preference may be given to the closest representative monitor for this factor.”
Background value calculation

- Wind patterns between the monitor and the project area: “Monitors that are located in directions that are frequently upwind of a project are more likely to represent a project area’s background concentrations than monitors that are frequently downwind. Preference should be given to upwind monitors for this factor, whenever appropriate.”

- A single monitor was identified for each analysis location.
- The 3-year average of the highest annual value constitutes the background value.
- Data excluded includes approved EPA exceptional events and the April 3 and 4, 2012 one-time compliance issue at the West Chandler monitor.
Region’s PM$_{10}$ monitor locations

Only upwind monitor is Buckeye ~ 25 miles away.

Therefore, best downwind monitor selected for each analysis location.
Monitors near I-10 Interchange
Monitors used for I-10 Interchange

- **West Phoenix** selected because it is closest to the I-10 Interchange site (2.8 miles away)
- The Greenwood monitor was not selected because:
  - It is 3.8 miles from the I-10 Interchange site (1 mile farther away than the West Phoenix monitor);
  - due to its proximity to I-10, use of it would result in double counting the influence of I-10 traffic since the design value includes modeled concentrations from I-10 traffic as well
Monitors near Broadway Road interchange
Elimination of West 43rd Ave monitor

- The purpose of the West 43rd site is to determine the impact on ambient pollution levels of significant sources or source categories including sand and gravel operations, auto- and metal-recycling facilities, landfills, paved and unpaved haul roads, and cement casting operations.
- ADEQ, MCAQD, ADOT, and MAG (through interagency consultation) agreed that the West 43rd Ave monitor is not appropriate for determining a background concentration.
Monitor used for Broadway Road Interchange

- Durango Complex selected because it is closest to the Broadway Road Interchange site (4.5 miles away) after the West 43rd Ave monitor is eliminated from consideration.
Monitors near 40th Street Interchange
Monitor used for 40th Street

- **West Chandler** selected because it is closest to the 40th Street interchange site (6.7 miles away)
- The next closest is Tempe, 9.3 miles away
- Tempe and other potential monitors are located north of the South Mountains
Summary – PM$_{10}$ Hot-spot Analysis

- Met-data – consistent with regional conformity
- Receptor locations – array starting on right-of-way line and then offset with spacing based on guidance
- Analysis locations
  - I-10 used for conformity
  - Broadway Road and 40th Street presented in NEPA context to respond to public comment
- Background value
  - Single monitor [West Phoenix for I-10; Durango Complex for Broadway Road; West Chandler for Pecos Road]
  - No change to value calculation – 3-year average of annual high value
  - No change to data exclusion – only EPA approved events + April 3 and 4, 2012 at West Chandler
Summary – CO Hot-spot Analysis

- Met-data – consistent with regional conformity (December 16, 1994 – worst-case scenario)
- Modeling only the winter quarter
- Receptor locations – same array as used for PM$_{10}$
- Analysis locations – same locations used for PM$_{10}$
- Background value – no change