1. Intro/title slide

Photochemical Modeling for the Bay Area 2004 State Implementation Plan Revision for Attaining and Maintaining the 1-hour NAAQS for Ozone

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Date

2. Contributing Consultants/Contractors

- ENVIRON
- Alpine Geophysics
- ATMET
- San Jose State University
- With significant contributions by BAAQMD technical staff

3. Ozone Modeling Basics

- Ground-level ozone (smog) results from emissions of "precursor" hydrocarbons ("HC", "TOG", "VOC") and oxides of nitrogen ("NOx") that react in the presence of sunlight
  - Higher temperatures increase the reaction rates
- Emission sources include:
  - Biogenic (trees and other foliage mostly)
  - Stationary (e.g., electric utilities, refineries)
  - Area (e.g., residential sources, dry cleaners, gas stations, consumer products)
  - On-road mobile (cars, trucks, motorcycles)
  - Off-road mobile (construction, recreation, lawn/garden, transportation)
- What is modeling and how is it done in SIP context?
  - 3-dimensional deterministic mathematical model (not derived from observations)
  - Characterization of input meteorology and emissions must be highly accurate
    - We rely on models to characterize these components as well
  - Replicate several historical episodes to establish adequate "base case"
  - Substitute projected emission estimates to establish "future case(s)"
- 2004 SIP is key objective, but not sole objective.
- What is CCOS and why is it important?

4. Characteristics of Modeling Effort

- State-of-science; congruent with CARB CCOS modeling
- Useful for:
  - 1 hr, 8 hr, and PM2.5 planning
  - Regional land use planning efforts

    - Inter-district transport assessment and responsibilities
- Will provide the District with extensive in-house modeling capabilities: why is this important?

5. Very Large Effort

- Heavy involvement of many agencies
    - EPA, CARB, other AQMDs, MTC, CalTrans
    - Others including public interest and industry
    - Funding: $500,000 from BAAQMD; $200,000 from MTC
    - "Transparent" technical work
- Project is exceptionally well vetted
- CARB has major role as data source from CCOS money invested by District
- Project is continually delayed because CARB is behind schedule to provide data
    - ENVIRON and District are undertaking CARB's work;
    - Nevertheless, we are moving ahead as quickly as possible
- Current schedule

6. Some Details

- Episode selection
    - Represent likely event?
    - Represent sufficiently high ozone?
    - Represent local and/or regional ozone?
    - Quality of measurement data for episode?
- Selected episodes and why
- Model considerations and selection
        - State-of-science
        - Adequately supported
        - Related to CARB CCOS effort
        - Public domain
- Types of models needed
        - Meteorological model
        - Emissions modeling (esp. for on-road emissions)
        - Photochemical model
- Geographical area of modeling (domain)
- Emissions "base case"
- Example ozone movie
- Example ozone iso-contours
- Topographic map to show complexities of meteorological modeling

7. Questions and Answers