What type of project-level assessments may need to be completed?

- **CEQA Analysis**
  - Maximum daily emissions
  - Constructions and operations *(separate thresholds)*

- **General Conformity**
  - Peak annual emissions
  - Constructions and operations *(cumulative)*

- **Transportation Conformity**
  - CO hot spots
  - PM10/2.5 hot spots
## General conformity de minimis thresholds for Sacramento County

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Federal Attainment Status</th>
<th>De Minimis Threshold (40 CFR 93.153)</th>
</tr>
</thead>
<tbody>
<tr>
<td>VOC</td>
<td>Severe nonattainment ((O_3\text{ precursor}))</td>
<td>25 tpy</td>
</tr>
<tr>
<td>NOx</td>
<td>Severe nonattainment ((O_3\text{ precursor}))</td>
<td>25 tpy</td>
</tr>
<tr>
<td>PM10</td>
<td>Moderate nonattainment</td>
<td>100 tpy</td>
</tr>
<tr>
<td>PM2.5</td>
<td>Nonattainment</td>
<td>100 tpy</td>
</tr>
<tr>
<td>CO</td>
<td>Maintenance</td>
<td>100 tpy</td>
</tr>
<tr>
<td>SO\textsubscript{2}</td>
<td>PM2.5 precursor</td>
<td>100 tpy</td>
</tr>
</tbody>
</table>


- Only applicable to projects with **federal action**
- Projects with emissions less than de minimis thresholds assumed to conform with state implementation plan (SIP)
What type of analysis is required for transportation conformity?

- CO hot spots analysis
  - Screening process available in the SMAQMD CEQA Guidelines
  - Follow UC Davis/Caltrans CO Protocol (1997) for all refined analyses
  - U.S. EPA guidance for MOVES2010b and CAL3QHC to be used for other states
What type of analysis is required for transportation conformity (continued)?

- PM10/2.5 hot spots
  - Generally only required for projects that result in a significant increase of diesel vehicles
  - Interagency consultation to confirm requirements

<table>
<thead>
<tr>
<th>Type of Project</th>
<th>Recommended Model(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highway and intersection projects</td>
<td>AERMOD, CAL3QHCR</td>
</tr>
<tr>
<td>Transit, freight, and other terminal projects</td>
<td>AERMOD</td>
</tr>
<tr>
<td>Projects that involve both highway/intersections and terminals, and/or nearby sources</td>
<td>AERMOD</td>
</tr>
</tbody>
</table>
What methods are available to complete a project-level assessment?

**Emission Factors**
- CalEEMod
- EMFAC2011
- OFFROAD Database Models
- OFFROAD2007
- SMAQMD Roadway Construction Emissions Model
- MOVES2010b
- NONROAD2008a
- AP-42

**Air Dispersion and Health Risk**
- AERMOD
- CALPUFF
- EDMS
- HARP
- CAL3QHC/R
- CALINE4

*Other methods / options are available!*
How to determine what model/method to use to estimate emissions

- How much information/data do I have?
- What level of environmental review (Initial Study, Environmental Impact Report, etc.) is required?
- How complex is the project?
- What are the possible emission sources (both construction and operations)?
- Where is it located (California or somewhere else)?
- What are the regulatory requirements (i.e., does an agency, like the FAA, require a specific model)?
- What is the attainment status of the region?
- Is there federal action?
What obstacles often need to be overcome in project-level analyses?

- Limited project information often available from project proponents
- Many agencies and project proponents are overworked and understaffed
- A combination of models/methods is often required to complete analysis
- Some equipment types not available in CalEEMod (airport ground support equipment)
- Is the government operating (e.g., are data and/or staff available)?
Regulatory requirements may dictate the tools to be used

- EDMS is the required model to perform air quality analyses for aviation sources
Regulatory requirements can present challenges (Case Study: EDMS)

- Ground support equipment (GSE), roadways, and parking lot parameters are not California-specific
- Model input files can be HUGE
Projects with limited information can be handled simply

- “The proposed project consists of a 64-unit mid-level apartment building with 100 parking places.”
  - Project is in the preliminary stages of analysis and an Initial Study/Mitigated Negative Declaration is being prepared.
  - Client is unable to provide specific project details.

Use CalEEMod
When is CalEEMod not a good tool to use?

- Limited land use options
  - Often difficult to fit a project type (e.g., airport) to the available options
- Limited flexibility, especially for highly complex projects
- Current version (2013.2.2) is improved, but bugs and other issues can be problematic
- Often does not handle change well
  - Output reports are finicky
  - Changes to the input can destroy links/references to Excel output
Projects with detailed information require a complex analysis.
Flexibility in Excel workbooks is essential to control variables

- **DO NOT HARD CODE DATA IF POSSIBLE!!**
- Key considerations in spreadsheet:
  - “Lookup column” created to lookup emission factors based on fuel type, OFFROAD model name, and horsepower size
  - **IF/THEN** statement written to lookup on- versus off-road emission factors
  - **INDEX/MATCH** statement written to lookup equipment type (“lookup column”) by pollutant
  - **INDIRECT** statement written to change the referenced external workbook and/or emission factor year as necessary
  - Variables (construction start year and truck speed) placed in external cell for flexibility
How can project-level analyses affect project development?

- Large commercial airport in California
  - Preferred alternative changed based on public comments
  - End result equals a hybrid of two alternatives analyzed in DEIR

- Projects located in ozone nonattainment regions
  - NOx emissions can be difficult to mitigate compared to PM
  - Incorporate emission control measures during *project design* and not as an afterthought with mitigation
  - General conformity requires mitigation to zero if de minimis thresholds exceeded
Possible tool and policy improvements

- Allow option to report emission factors in a variety of units (e.g., g/bhp-hr for OFFROAD)
- Combine all pollutants and fuel types into one consistent OFFROAD model
- Add methane (CH$_4$) and nitrous oxide (N$_2$O) to web-based EMFAC model
- Allow all pollutants to be reported by speed bin in EMFAC
- Add ability to select specific vehicle categories in EMFAC2011-PL
- Additional flexibility in EMFAC and OFFROAD for mitigation could improve analysis (e.g., emission tiers, model years, etc.)
Possible tool and policy improvements (continued)

• Add ability to select specific vehicle categories in EMFAC2011-PL
• Streamline the output reports for CalEEMod
• Expand land use options for CalEEMod
• Improve ability to analyze multiple phases in CalEEMod
• Include GSE and other industrial off-road equipment in CalEEMod for operations
Questions?

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