



The air emissions estimating model CalEEMod (www.caleemod.com) was introduced in February 2011. This model assists project proponents, land use jurisdictions (lead agencies) and air districts in complying with the California Environmental Quality Act (CEQA) by estimating emissions of criteria pollutants and greenhouse gases from development projects. Prior to approving a project, CEQA requires a lead agency to determine if the project will have an impact on air quality (among other environmental areas) and require appropriate mitigation for those impacts.

The Sacramento Metropolitan Air Quality Management District (SMAQMD) is recommending the use of CalEEMod for CEQA related air quality analysis beginning **July 1, 2012**. Any project for which the draft environmental document will be released for public review after **July 1, 2012**, should utilize CalEEMod for its air quality analysis.

As SMAQMD staff, lead agencies and consultants begin using the model, we are certain to find quirks and possibly errors. Any errors should be reported via e-mail to inquiry@caleemod.com. A working group of air districts exists to discuss and fund necessary upgrades to CalEEMod. The model is intuitive and the User's Guide is well documented. The User's Guide and other support documents can be downloaded from www.caleemod.com.

SMAQMD staff has created this Tips document to assist users in recognizing critical components of the model. The Tips are organized by model input screens. Changes will be made to the Tips as we learn more about the workings of model. Additionally, some of the quirks described in these Tips will be fixed in the next upgrade to CalEEMod, which is expected to be completed before July 1, 2012.

Project Characteristics and Land Use

1. The Project Characteristics and Land Use screens of the model are the minimum inputs required to run the model for a project.
2. Operational years in the model include 1990, 2000, 2005, 2010-2025, 2030, 2035 and 2040. Any years not specifically listed, if used, the model will round down to the nearest year's data.
3. Select the County of Sacramento as the location of the project and select Sacramento Municipal Utility District for the utility provider.
4. Wind speed and precipitation are populated automatically when location is selected. This information is used for fugitive dust calculations.
5. Confirm the climate zone for the project by zip code. Sacramento County locations are usually zone 6 or 2. The User's Guide has a look-up table.



6. User defined land uses are allowed, but no default data exists in the entire model, so the modeler has to supply all data.
7. The building size square footage should be entered into the model, not the lot size for commercial uses.
8. Lot acreage is used to determine residential density.
9. If entering a mixed-use, multi-story project, enter each use separately, then assign the acres to the residential portion and zero out the acreage on the commercial portions, leaving the square footage.
10. Parking lots, parking structures and other paved areas for commercial uses need to be entered as separate land uses than residential, commercial, retail, etc. to assist in calculating grading and asphalt emissions accurately.
11. Adjust default square footages and acreages to be consistent with project specifics.

Construction

12. The default equipment list and construction schedule is only valid for 35 acre and smaller projects with buildings no more than 4 stories tall. Otherwise, project specific information must be used.
13. The project acreage entered on the Land Use screen determines the equipment list for the construction phases.
14. Check to be sure the construction schedule end date coincides with the operational year for the project that was entered on the Project Characteristics screen.
15. The default construction start date is 1/2/2011, a default schedule is included, and the phases of the default schedule do not overlap.
16. A modeler can input overlapping construction phases for a project, run the model and save the input file. There is a glitch with re-opening the input file in the model, where the overlapping construction phases won't re-load properly. The model will reset the phase start/end dates so that there are no overlapping phases. The modeler will have to readjust the phase start/end dates impacted. This glitch will be fixed in the next upgrade of the model.
17. On the construction schedule, if the modeler changes the end-date of a phase, the number of days in the phase will be recalculated and if the modeler changes the number of days in the phase, the end date will be recalculated.
18. Default construction data does not include amounts of (dirt, fill, concrete, etc.) material being hauled, or information on the demolition or trenching phases. If the project includes these activities, project specific information must be obtained and entered into the model.



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19. A general rule for construction equipment is if the schedule is shortened by $\frac{1}{2}$ then the number of equipment needs to be doubled. Changes to the schedule don't automatically change the equipment list.
 20. When entering non-default equipment information (horsepower, load factor, i.e.) into the model be sure that the horsepower falls within the min-max tiers from the OFFROAD model so emission factors are available for the equipment. Check Appendix D of the User's Guide for the minimum-maximum tier levels.
 21. The on-road fugitive dust screen has "Average Vehicle Weight (tons)" cells that are used to calculate emissions. This information represents the average weight of the vehicles that normally travel the road, not the average weight of the vehicles from the project.

Operational

22. Vehicle fleet mix and emission factors for summer, winter and annual should not be changed unless first discussed with the SMAQMD.
23. Note that for Sacramento, the model assumes no hearths (woodstoves or fireplaces) are included in the development. If the project includes hearths then the modeler must modify the inputs and mitigate excess emissions through mitigation measures other than hearth measures in the model. SMAQMD's Rule 417 regulates hearth installations.
24. For wastewater treatment, override the default types of treatment with the treatment expected for the project. If the project is served by the Sacramento Regional County Sanitation District (SRCSD), the SRCSD suggests using the following percentages by category: Septic Tank - 0.93%, Aerobic Digestion - 0%, Anaerobic with Facultative Lagoons - 0%, Anaerobic with Digester Gas Combusted - 15.32%, Anaerobic with Digester Gas Combusted and Cogeneration - 83.75%.
25. For solid waste, override the default landfill types with the type of landfill that will serve the project. Solid waste handling is very complicated and different for each jurisdiction, therefore consult with the jurisdiction's planning department.
26. Note that operational mobile emission reduction mitigation measures based on VMT (vehicle miles traveled) reductions rely on the use of a suburban density rate as the baseline, therefore the trip rates in the model for high rise type residential uses will not match ITE Trip Generation rates for those uses.

Vegetation



27. There are two Vegetation tabs in the model, Sequestration and Land Use Change. Sequestration is calculated using a 20 year growth period and Land Use Change calculates a one-time sequestration change. The emissions are included separately from operational and construction emissions in the Annual Report. Consult with SMAQMD staff to ensure emissions are being credited properly for the project.

Mitigation

28. Mitigation for off-road construction equipment is set up in a grid format on the construction mitigation tab. If one cell in the grid is modified, then the entire grid needs to be filled in (engine tier levels, # of piece of equipment, DFP levels or "no change") for the model to recognize there is data in the grid.
29. For traffic mitigation, it is imperative that the modeler select a "project setting" type on the "Land Use and Site Enhancement" screen for the mitigation measures to calculate properly.
30. SMAQMD provides additional guidance in its *Recommended Guidance for Land Use Emission Reductions* regarding which mitigation measures can be used in CalEEMod and the requirements that must be met to obtain credit for the mitigation measures for a project.

Reports

31. Summer and Winter reports show maximum pounds/day of all emissions while the Annual report shows short tons/year of criteria pollutant and metric tons/year of greenhouse gas emissions.
32. The SMAQMD requests the Excel files for CalEEMod runs in addition to both the pdf and excel reports for each project.

General Advice

33. There is a remarks section on most data input screens. The remarks are limited to 255 characters on each screen. Use the remarks section to succinctly describe/support the changes made to defaults in the model run.
34. Consider making changes to the project characteristics and land use screens in an input file (Excel, csv) and reloading rather than within the Graphic User Interface (GUI) of the model because any other user defined changes in the model subsequent to those screens will be overridden if a change is made to those screens in the GUI.
35. User defined land uses can be used as a "dummy" to input total usage data for a project (for example, if you knew the total vehicle miles traveled for a roadway expansion).

SMAQMD Tips for Using CalEEMod



- 36.Changes to construction lists are most easily accomplished by making changes to an input file (Excel, csv) and then uploaded into the model.
- 37.If using a csv file make sure to delete rows that don't have data before importing to CalEEMod.
- 38.Since the input file is saved as an Excel file the user should set up a naming convention that delineates input files from report files (that can be exported as Excel files).
39. The undo button is handy at fixing data entry mistakes.
40. The default button recalculates for data changed on the input file.

Questions on CalEEMod can be directed to the following SMAQMD staff for projects being analyzed in Sacramento County and its incorporated cities.

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Additional user tips and a technical paper describing the methodology reasoning and policy development of CalEEMod have been published and posted on www.caleemod.com.

General CalEEMod questions may be submitted via e-mail to inquiry@caleemod.com.