



GREATER MONTEREY COUNTY  
INTEGRATED REGIONAL WATER MANAGEMENT PLAN

## Emissions Estimator Guidance Document

The Monterey County Regional Water Management Group is recommending the use of the California Emissions Estimator Tool (CalEEMod) to estimate IRWMP project emissions.

CalEEMod is a statewide land use emissions computer model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify potential criteria pollutant and greenhouse gas (GHG) emissions associated with both construction and operations from a variety of land use projects. The model was developed by the California Air Pollution Control Officers Association (CAPCOA) in February 2011 and is being adopted by many agencies and organizations to estimate project emissions.

The model quantifies direct emissions from construction and operations (including vehicle use), as well as indirect emissions, such as GHG emissions from energy use, solid waste disposal, vegetation planting and/or removal, and water use. The model incorporates Pavley standards and Low Carbon Fuel standards into the mobile source emission factors. Further, the model identifies mitigation measures to reduce criteria pollutant and GHG emissions along with calculating the benefits achieved from measures chosen by the user.

The CalEEMod tool can be downloaded for free at [www.caleemod.com](http://www.caleemod.com)

### Steps:

1. Download and Install CalEEMod
2. Compile project data to be entered into CalEEMod
3. The modeler can either enter data directly into CalEEMod or enter data into the csv file provided and then upload it to the model.
  - a. After entering project data, CalEEMod will automatically populate associated data in order to calculate emissions.
  - b. If you know specific information you can override this and provide a justification in the remarks section.
4. Create emissions report
5. Submit project emissions report to the Conservation Action Tracker:

<https://www.ccactiontracker.org>

(See the **Upload data to Conservation Action Tracker** section below for directions)

Please see the CalEEMod Users Manual found at <http://www.caleemod.com/> for more detailed assistance on using the model.

## Tips and Notes:

The following tips have been compiled to assist the user of CalEEMod. Tips are divided up by the CalEEMod screens.

**Due to the inclusion of default values, the model can calculate emissions from the project after input from the first two screens (Project Characteristics, Land Use).**

If at any point you override the default calculation, you must justify this in the remarks section. 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. If remarks over 255 characters are needed, submit them in a Word Doc

### ***Project Characteristics***

- Select Monterey County as the *Project Location* and select Pacific Gas and Electric for the *Utility Company*.
- *Climate Zone, wind speed, and precipitation* are populated automatically when location is selected. This information is used for fugitive dust calculations. The model only accounts for one Climate Zone for Monterey County.
- *Land Use Setting*: Select *Rural* or *Urban*
- The *Operational Year* determines vehicle emissions factors used. Emission factors for the following years are incorporated in the program 1990, 2000, 2005, 2010-2025, 2030, 2035, 2040. Other years are rounded down.
- Make sure the *Operational Year* occurs after the last *Construction Phase*.
- *Pollutants*: The grid to the left automatically has all boxes checked. Uncheck any pollutants you don't want reported. Some of the pollutants are a combination of other identified pollutants such as Carbon dioxide (CO<sub>2</sub>) is made up of biogenic and non-biogenic carbon dioxide. CO<sub>2</sub> Equivalent GHGs is the Global Warming Potential (GWP) weighted value of all GHGs. GWPs are based on the IPCC's Second Assessment Report 8. The emissions reporting for the Conservation Action Tracker website only requires CO<sub>2</sub>e totals.

### ***Land Use***

- The given land use choices may not be applicable for many IRWMP projects, however you can choose the land use that is most similar to your project, or define the land use if none of the ones provided fit your project.
- Each land use type has a blank land use subtype associated with it that the user can use if the other land use subtypes do not fit the types listed. There is no default data associated with the

blank land uses and all information that is based on land uses will need to be entered by the user otherwise no emissions will be calculated.

- If identifying a “User Defined” land use, the user should be prepared to supply necessary input data (e.g. water use, trip rates and characteristics, natural gas use, solid waste generation).
- *Unit Amount*: Enter the appropriate size of the land use in terms of the size metric selected. This will be used to calculate the rest of the columns in this data grid.
- *Lot Acreage* is used to calculate construction and grading defaults. Lot acreages for residential uses are also used to calculate housing density and related mitigations.
- The program associates the *Lot Acreage* value with the *building footprint* for non-residential land uses.
- *Parking*: Parking, other paved areas (e.g. driveways, sidewalks, etc.), and landscape areas associated with non-residential land uses must be entered as separate land uses to assist in calculating grading and asphalt emissions accurately.
- The building size square footage should be entered into the model, not the lot size for commercial uses.
- 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.
- The model requires at least one construction phase be listed to calculate project emissions. If not interested in construction emission results, the user can delete all but one phase and zero out the default number of equipment and trip lengths.
- The project acreage entered on the Land Use screen determines the equipment list for the construction phases.
- 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. The construction schedule must occur before the operational year.
- Default construction data does not include amounts of material (dirt, fill, concrete, etc.) 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.
- For construction equipment calculations, the user should evaluate whether the default equipment list, including equipment types and numbers, horsepower ratings, hours of operation, and duration of phases, are appropriate. If changes are made to the equipment list, the program will not automatically compensate by changing the construction time. Nor will the

program automatically revise the equipment list to reflect a revised construction time. Changes to one of these must accompany revisions of the other based on project-specific data.

- If modifying the construction dates in the input excel spreadsheet be sure to use the format of 4-digit year/2-digit month/2-digit day.

### ***Operational***

- To eliminate the emissions from a specific vehicle class category, the user can zero out the emission factors (on Operational-Mobile screen, Vehicle Emissions tab).
- Water and Wastewater calculates the energy associated with providing fresh water and processing wastewater. Intensity factors are based on average values for Northern and Southern California. If specific regional data is available, this default should be changed and justification for changes should be provided in the remarks box. Special attention must also be made to where the projects location is in terms of septic tanks. CalEEMod assumes 10% on septic, in most cases this will need to be zero.
- The percentage of wastewater treatments (e.g., septic, aerobic, anaerobic, etc.) should not exceed 100 percent. Considering prompts if user exceeds 100 percent in a future upgrade.
- 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.

### ***Vegetation***

- 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.
- The model assumes 100% survival rate of planted trees.

### ***Mitigation***

- If applying mitigation to construction equipment (e.g., higher tier engine, DPF, etc.), mitigation action for each construction equipment type is required to be identified, even if "no change", in order for the program to calculate the benefits from those achieving reduction.
- Alternative fuel options (e.g., CNG, bio-diesel) are provided for each construction equipment type. It is the responsibility of the lead agency to ensure the equipment operated by the project actually uses alternative fuel.

- 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.
- 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.

### **Reports**

- 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.

### **Other**

- The output report provides either peak daily emissions from summer or winter emission factors, or annual emissions. Quarterly emissions results are not provided but can be calculated by multiplying the peak daily by 90 days (i.e., one quarter of year), or dividing the annual by four (i.e., one quarter of year).
- The output report for Vegetation identifies the CO<sub>2</sub>e emissions reductions (or increases) in units of metric tons, not metric tons per year. To ascertain the annual amount of emissions, the user should divide the total metric tons by the anticipated life of the project.
- Changes to construction lists are most easily accomplished by making changes to an input file (Excel, csv) and then uploaded into the model.
- If using a csv file make sure to delete rows that don’t have data before importing to CalEEMod
- 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).
- The undo button is handy at fixing data entry mistakes.
- The default button recalculates for data changed on the input file
- After “Land Use”, the User has the option to go directly to “Reporting” as the default values will be automatically filled for construction and operational activity based on the data from the first two screens, e.g., land use type, location, etc. The model does not contain default assumptions for demolition, grading, site preparation, or mitigation. The User will have to provide that information in order to ensure inclusion in the final calculations.

## Upload data to Conservation Action Tracker

The Conservation Action Tracker is a website designed to assist project managers, conservation organizations, and the general public find and share information about conservation projects on the Central Coast. The site is designed to house and analyze information on projects done by a multitude of organizations such as regional Resource Conservation Districts, environmental groups, water agencies, and municipalities that work on the Central Coast. Many of these organizations, as well as funders and agencies that issue permits, are becoming increasingly concerned with the impacts on climate change due to emissions from regional projects. To allow for these impacts to be incorporated into the analyses of the region, the Conservation Action Tracker is being designed with a place for project proponents to enter the results of their CalEEMod report. This data can be used to determine organizational, regional, and funding specific impacts to climate change.

1. Visit [www.ccactiontracker.org](http://www.ccactiontracker.org) and log in as a project manager.
2. Under *My Projects*, Find (or enter) the project you would like to report project emissions for and click the edit button.
3. Under the *Climate and Emissions Reporting* tab enter the following:
4. Reporting Timeframe:
  - a. Annual
  - b. Winter
  - c. Summer
5. Enter Land Use Size (Example: 2 acres)
6. Enter the following fields from your CalEEMod project report:
  - a. Construction:
    - i. Unmitigated Total CO<sub>2</sub>e
    - ii. Mitigated Total CO<sub>2</sub>e
  - b. Operational:
    - i. Unmitigated Total CO<sub>2</sub>e
    - ii. Mitigated Total CO<sub>2</sub>e
7. Check any *Proposed Mitigation Strategies* and fill in the adjacent box with a brief description. Strategies include:
  - a. Energy efficiency
  - b. Renewable energy
  - c. Alternative energy
  - d. Biodiesel use
  - e. Water conservation
  - f. Waste and Recycling
  - g. Transportation reductions
8. Under *Upload CalEEMod report*, click the *browse* button and upload the CalEEMod emissions report as a PDF or Excel file.

**Sources:**

California Emission Estimator Model (CalEEMod) Version 2011.1 User's Guide. February 2011. South Coast Air Quality Management District <http://www.aqmd.gov/calmod/doc/UsersGuide.pdf>

CalEEMod Version 2011.1.1 Key Information Sheet. June 2011

SMAQMD Tips for Using CalEEMod. Sacramento Air Quality Management District.  
<http://www.airquality.org/ceqa/UserTipsSMAQMD.pdf>