



California Emission Estimator Model (CalEEMod) Training

February 17, 2011

**South Coast Air Quality Management
District**

Diamond Bar, California

Land Use Emission Model Background

- URBEMIS model currently calculates criteria pollutants emissions from construction and operation at air district, county, air basin, state levels
- URBEMIS calculates only direct CO₂ GHG emissions (except if using post processor in Bay Area)
- SCAQMD developed a model that could provide a more comprehensive GHG analysis that evaluates more GHGs
- Includes a separate mitigation measure module for both criteria pollutants and GHGs
- Interest shared by other air districts in California
- Model includes the latest factors, survey data, and calculation methodologies
- Only well documented air quality analysis methodologies, factors, etc. used

CalEEMod - Overview

- Statewide model to accommodate all 35 air districts
- Can calculate impacts at air district, county, air basin, state levels
- Calculates criteria pollutants and direct and indirect GHG emissions from construction, operation
- Uses statewide defaults unless provided by air district
- Mobile source emission factors:
 - Construction equipment: CARB's OFFROAD2007
 - Operational vehicles: CARB's BURDEN model
 - Incorporates Pavley and Low Carbon Fuel standards
- Uses latest ITE Trip Generation (8th edition) – modified trip rate of warehouses (w/ and w/o rail service)

Key Features

- Additional land uses (e.g., parking lot, parking structure, golf course, swimming pool, etc.)
- Construction profile (equipment type, hours of activity) based on SCAQMD construction survey
- Amount of acres graded and site preparation calculation based on equipment profile from survey
- On-road construction vehicle default factors more representative of vehicle fleet type
- Vendor trips based on the latest SMAQMD survey
- VOC from consumer products based on sq. feet
- VOC from non-residential consumer products included
- Included landscaping equipment during winter season

Key Features (continued)

- Operational ITE trip rates used - maximum (daily), weighted average (annual)
- Default diverted and pass-by trips included
- Provides ability to insert spreadsheet for large projects (e.g., EMFAC2007, construction equipment list)
- Calculates direct and indirect GHG emissions
 - Energy use
 - Water/wastewater use
 - Solid Waste disposal
 - Vegetation planting and/or removal

Key Features (continued)

- Includes GHG mitigation measures recently approved by CAPCOA
 - **Land use** (e.g., increase density)
 - **Neighborhood enhancements** (e.g., pedestrian network)
 - **Transit improvements** (e.g., transit network)
 - **Commute trips** (e.g., trip reduction, telecommuting)
 - **Energy** (e.g., improvement over Title 24 energy efficient appliances)
 - **Water** (e.g., low-flow water fixtures, water-efficient landscape and irrigation)
 - **Solid Waste** (e.g., recycling, composting)
- All equations, emission factors, and sources verified and documented in appendices

Screen Design

- Based on familiar and user-friendly Microsoft products
- New drop-down menus that populate automatically with defaults
- Provides ability to change defaults (equipment, phase, activity hours, HP, load factors, emissions factors) and highlights changes on-screen
- Reminds users to provide remarks to justify changes (to assist reviewers)
- Land use screen shows only selected land uses – easier to view mixed use development
- Different options to navigate through model

Future Upgrades

- Incorporate EPA's AP-42 Paved Road factors
- Revise report to include input parameters (equipment phase, type, % mitigation reduction)
- Update to include CARB's EMFAC2011 and OFFROAD 2011 when released
- Include Mixed Use Development (MXD) Software
- Incorporate further refinements to construction activities and equipment
- Update to include CEC's 2010 Residential Appliance Saturation Study (RASS) with updated climate zone map and intensity values