

# California Emission Estimator Model (CalEEMod®) 2016

# **Barbara Radlein** Program Supervisor South Coast Air Quality Management District

**CAPCOA Update** August 31, 2016

# CalEEMod® 2016.3.1 Status

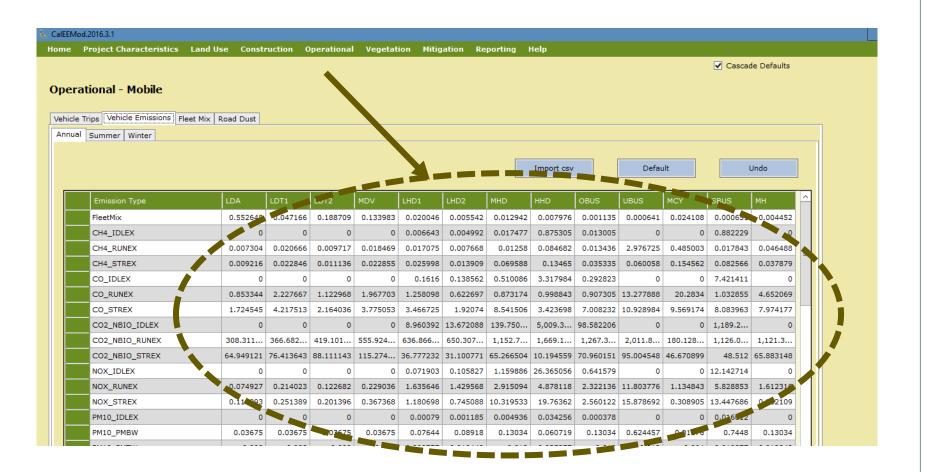


- CAPCOA CalEEMod Focus Group meets monthly
  - Comprised of representatives from 8 air pollution control agencies
- Current upgrade action items for version 2016.3.1
  - 28 programming/coding efforts
  - 5 changes to the reporting
- 2016.3.1 Beta released for testing
  - January 2016 Focus Group Only
  - June 2016 Focus Group & Power Users
    - 55 Power Users from 38 organizations were invited
    - Received comments from 10 Power Users

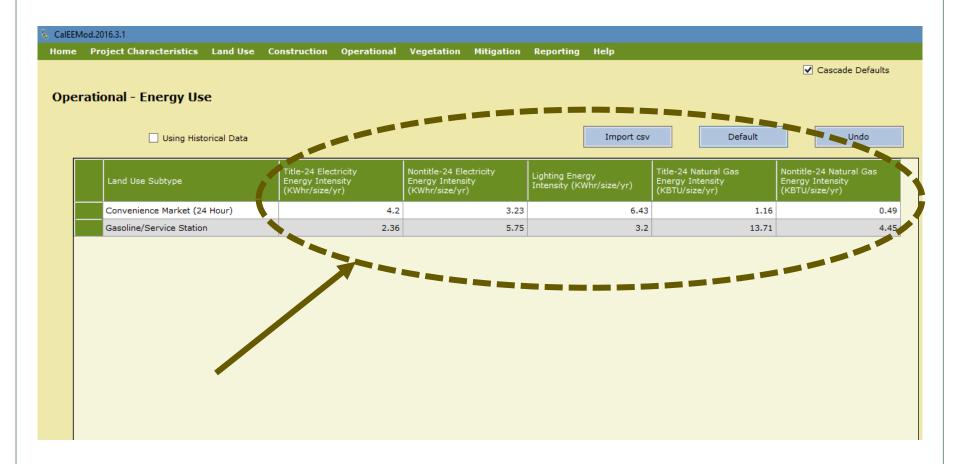
# **Top 10 Upgrades**

- 1. CARB's 2014 EMFAC & Off-Road Source Categories
- 2. 2013 update Title 24, Part 6 Building Efficiency % reduction
- 3. ITE trip rates from 9<sup>th</sup> edition Trip Generation Manual
- 4. New "Fleet Mix" tab per land use type (Operational Mobile)
- 5. New "Start of Construction" box to trigger construction calendar
- 6. Update Global Warming Potentials per IPCC's 4<sup>th</sup> Assessment
- 7. New Stationary Sources during Operation (e.g., generators, boilers, fire pumps)
- 8. Fixed GHG Mitigation Measures
- 9. Exclude open spaces (e.g., city parks, golf courses, recreational swimming pools, and parking lots/garages) from consumer products and architectural coating (VOC) calculations
- 10. New Unpaved Road Dust calculation option for SLOAPCD/SMAQMD

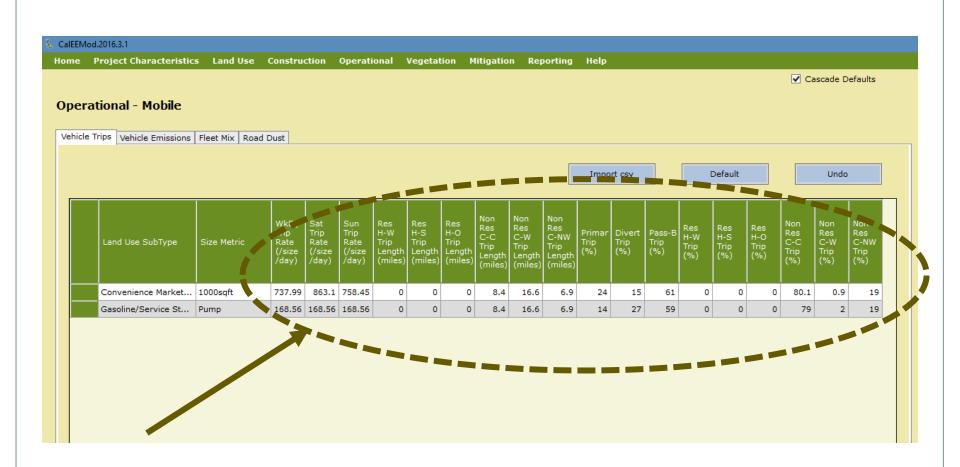
#### 1. EMFAC 2014/OFFROAD Update

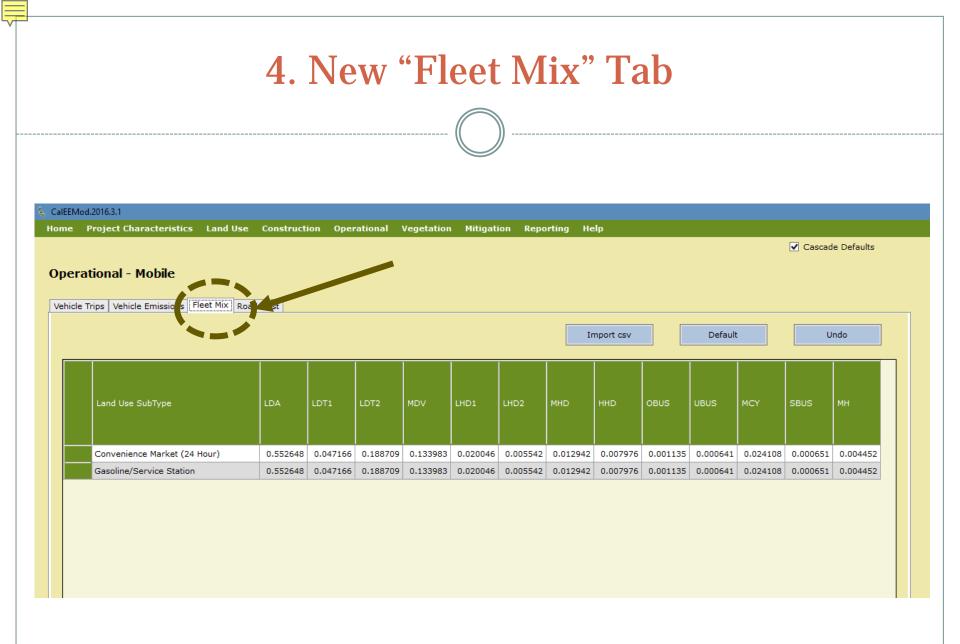


#### 2. 2013 Update to Title 24, Part 6

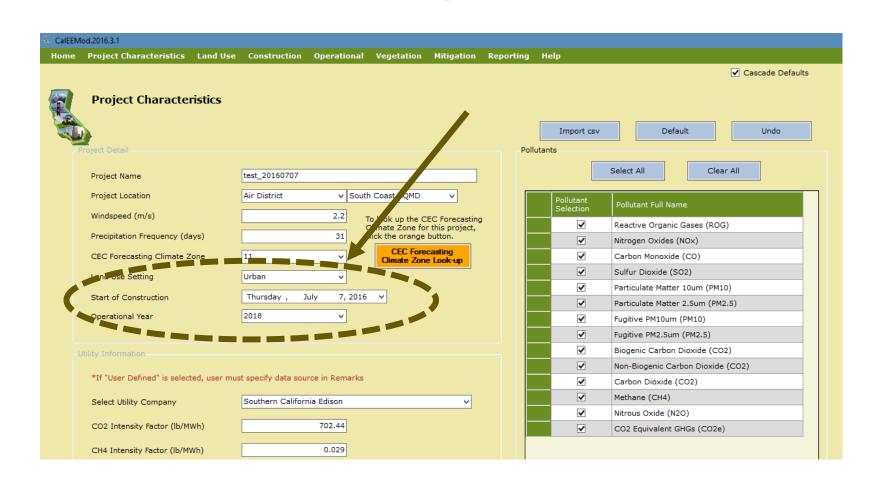


### 3. Trip Rates from ITE 9<sup>th</sup> edition





#### 5. New "Start of Construction" Box



# 6. Updated Global Warming Potentials

100-yr GWPs from the IPCC second assessment report (SAR) and fourth assessment report (AR4). AR4 GWPs are used for the 2000-2014 emission inventory

Gas Name	Formula	Lifetime (years)	SAR GWP	AR4 GWP	Percent Change
Carbon Dioxide	CO2		1	1	
Methane	CH₄	12	21	25	+19%
Nitrous Oxide	N <sub>2</sub> O	114	310	298	-3.9%

#### 7. New Stationary Sources During Operation

																🗹 Ca	scade De	aults
	_																	
perational - Stationary S	Source	es																
nergency Generators and Fire Pumps	Genera	ators / Fire	Pumps	EF Proc	ess Boilen	s Boilers	EF Use	r Defined										
										In	mport csv	,		Default			Undo	
											inport car			Derduit			01100	
			Numb	or of						Load								
Equipment Type		Equip		uel Type			Horsepower (HP)		Factor (0-1)	· He	ours/Day	Hours/Ye	ar Equi	quipment Description				
Emergency Generator				1 C	NG				10	0	0.73	1		50 Emer	rgency Ge	enerator ·	- CNG (0 -	- 5
Fire Pump				1 Di	iesel				5	0	0.73	1		50 Fire F	Pump - Di	esel (50	- 75 HP)	
ency Generators and Fire Pumps	Generato	ors / Fire Pu	umps EF	Proces	s Boilers	Boilers	EF User	r Defined										
														Default			Undo	
										1	mport cs	v		Derault			Unac	)
		700						101										
Equipment Description	TOG E.F.	TOG E.F.	ROG E.F.	ROG E.F.	CO E.F.	CO E.F.	NOX E.F.	NOX E.F.	SO2 E.F.	SO2 E.F.	PM 10	PM 10 E.F.	PM 2.5 E.F.	PM 2.5 E.F.	CO2 E.F.	CO2 E.F.	CH4 E.F.	CH4 E.F.
		Units		Units		Units		Units		Units	E.F.	Units	E.F.	Units		Units		Units
Emergency Generator - CNG		Ib/M		ppmv		ppmv		ppmv	0.0006			ІЬ/м	0.0095			lb/M		Ib/M

#### 8. Fixed GHG MM Calculations

🐛 CalEEI	Mod.2016.3.1								
Home	Project Characteristics	Land Use Construction	Operational	Vegetation	Mitigation	Reporting	Help		
									✓ Cascade Defaults
Μιτιά	gation								
Cons	truction Traffic Area Energy	gy Water Solid Waste							
	d Use & Site Enhancement Cor								
Com		linute			*The mit	igation should b	e applicable to land use projec	ct evaluated.	
	Project Setting		<b>v</b>				ontain percent reduction justi		Import csv
	Land Use					– Parking Polic			
	Increase Density	UT-1]	Dwenin Units/	acre			arking Supply	[PDT-1]	
			Jobs/Job acre				luction in Spaces		
	Increase Diversity	[LUT-3]							
						Unbund	lle Parking Costs	[PDT-2]	
	Improve Walkability Desi Intersections/Square Mi	- [				Monthl	y Parking Cost (\$)		
		_				On-Stre	eet Market Pricing	[PDT-3]	
	Improve Destination Acc Distance to Dwntwn/Job						rease in Price		
	Increase Transit Accessit					- Transit Impr	ovement		
	Distance to Transit Stati					Provide	BRT System	[TST-1]	
	Integrate Below Market F	· · · ·	F-6]			% Line	es BRT		
	% Dwelling Units Below	Market Rate				_		[TOT 0]	-
	Neighborn.col Enhancements-						Transit Network	[TST-3]	
	Improve Pedestnan	vork [SDT-1]			~	% Inci	rease Transit Coverage		
	Provide Traffic Calming N	Measures [SDT-2]				Increas	e Transit Frequency	[TST-4]	
						Level	of Implementation	~	
	% Streets with Improve	ement	×						

#### 9. Ability to Exclude Open Spaces From VOC Calculations

#### City Park/Golf Course Land Uses

	d.2016.3.1								
ie	Project Characteristics	Land Use	Construction	Operational	Vegetation Mitigatio	n Reporting	Help		Cascade Defaults
	Land Use					[	Import csv	Default	Undo
	Land Use Type	Δ Land Use :	Subtype		Unit Amount	Size Metric	Lot Acreage	Square Feet	Population
	Recreational	Golf Cours	e		18	Hole	12	5.66 0	) (
	Recreational	City Park			10	Acre		10 435,600	) C
	Retail	Convenien	ce Market (24 Ho	ur)	2.1	1000sqft		0.05 2,100	) (
	Retail	Gasoline/S	ervice Station		6	6 Pump		0.02 847.05	; (
*									
Po	pulation	0		City Park/Golf	Course Building Area Squ	are Feet	0		

#### 9. Ability to Exclude Open Spaces From VOC Calculations (concluded)

#### **Recreational Swimming Pool Land Use**

🐛 CalEEMo	d.2016.3.1												
Home	Project Characteristics	Land Use	Construction	Operational	Vegetation	Mitigation	Reporting	Help					
	Land Use						[	Import c	5V	Default		Cascade Defaults	
	Land Use Type	Land Use S	Subtype		Unit Amo	unt	Size Metric	Lot	Acreage	Square Fee	et	Population	
Þ	Recreational	Recreation	al Swimming Poo	il .		20	1000sqft			0.46	20,000	0	
*													
Pot	pulation	0											
			-										
Lot	Acreage	126.19		Recreational S	Swimming Pool	Building Area	Square Feet			Prov	iour	Next	

#### 10. New Unpaved Road Dust Option CalEEMod.2016.3.1 Home Project Characteristics Land Use Construction Operational Vegetation Mitigation Reporting Help Cascade Defaults **Operational - Mobile** Vehicle Trips Vehicle Emissions Fleet Mix Road Dust Import csv Default Undo Paved Road Dust Unpaved Road Dust AP-42's Equation 1b Method 100 % Pave Material Silt Content (%) 4.3 Road Silt Loading (g/m2) 0.1 0.5 Material Moisture Content (%) 2.4 Average Vehicle Weight (tons) Mean Vehicle Speed (mph) 40 CARB Unmitigated Unpaved Road Statewide Emission Inventory Method Use CARB's 2.0 (lbs PM10/VMT) and 0.2 (lbs PM2.5/VMT)

### **Upgrades to Reports**

- 1. New output summary reports present peak daily emissions on the Summer and Winter reports and present GHG summary on Annual report instead of displaying the sum of maximum daily emissions over the years.
- 2. New mini-headers/footers on Winter/Summer/Annual reports to indicate project name & type of report.
- 3. New highest quarterly value of ROG + NO<sub>x</sub> during construction on Annual report for projects located in the San Luis Obispo APCD
- 4. "Paving Acres Disturbed" in the reports no longer defaults to zero.
- 5. Fixed formatting problem that places Section 4.4 (Fleet Mix) below the Fleet Mix table and atop the title in Section 5.0.

# **Other Upgrades/Fixes**

- 1. Default horsepower (hp) determination based on weighted average of statewide operating activity for each off-road equipment type has been modified.
- 2. New reminder on fleet mix screen to alert the user that the total is in fractions if fleet mix exceeds 100%.
- 3. Solid waste landfill capture gas flare updated to 100% for Santa Barbara County APCD.
- 4. New electrical option added as an alternative to fuel on mitigation screen.
- 5. Fixed NOx emissions calculation for when biodiesel B20 is selected as a fuel.
- 6. Re-labeled "Total Acres Disturbed" column (Dust from Material Movement screen) has to "Total Acres Graded."
- 7. Changed units on "Consumer Products" screen "# ROG/sq ft/year" to "# ROG/sq ft/day."
- 8. Fixed calculation of non-residential architectural coating VOC emissions when the user changes the exterior area to be painted.
- 9. Updated area source natural gas emission factors for CO,  $SO_x$ ,  $NO_x$  and lead to align with EPA's AP-42.

# **Other Upgrades/Fixes (concluded)**

- **10**. Arena trip type (%) now adds up to 100%.
- 11. Update reflects regional default data provided by the air districts/local MPOs (e.g., architectural coating VOC content limits, percentage of wastewater treatment, MPO information, number of snow days vs. summer days, waste treatment plant specific effluent nitrogen, etc.)
- **12**. Fixed calculation of solid waste (landfill) GHG emissions when applying energy recovery.
- **13**. GHG energy usage calculation for single family housing has been corrected.
- **14**. Added City of Vernon to drop down list of utilities.
- **15.** Updated CO2 intensity value for Southern California Edison utility.
- **16**. Deleted box for entering a number next to the NEV network mitigation box.
- 17. Changed names of two air districts (e.g., El Dorado County APCD to El Dorado County AQMD and Monterey Unified APCD name to Monterey Bay Air Resources District).
- **18**. Fixed other typos and spelling errors, etc.



- Anticipate public release in September 2016
- Conduct local training events throughout California
- Exploring Webcast Training/Youtube options

### **Contact Information**

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**South Coast** 

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