

Appendix H
Transportation Energy Calculations for LAC+USC Master Plan

Transportation Energy Calculations for LAC/USC Master Plan

Energy Factors

Transport Mode	Energy Intensity (BTUs per vehicle mile)	Energy Intensity (BTUs per passenger mile)
Passenger Vehicles (Cars)	5,214	3,364
Light Trucks	6,900	3,750
Buses (Transit – Natural Gas or Diesel)	37,718	4,240
Transit Rail (Light and Heavy)	68,217	2,513
Source: Oak Ridge National Laboratory 2013. <i>Transportation Energy Data Book</i> . Edition 32, Chapter 2, Energy.		

Transportation Energy Calculations

EXISTING				
Total VMT from CalEEMod		45,958,539		
Fleet Mix from CalEEMod for Existing 2014				
Type	% of fleet	BTU Intensity (per VMT)	Total BTU	
LDA	0.535275	5,214	128,266,782,606	
LDT1	0.058759	6,900	18,633,296,772	
LDT2	0.178478	6,900	56,597,858,053	
MDV	0.127034	37,718	220,208,887,880	
LHD1	0.038632	37,718	66,967,187,970	
LHD2	0.006246	37,718	10,827,217,231	
MHD	0.015618	37,718	27,073,243,470	
HHD	0.028471	37,718	49,353,458,498	
OBUS	0.002426	37,718	4,205,384,086	
UBUS	0.003171	37,718	5,496,814,896	
MCY	0.003696	5,214	885,664,431	
SBUS	0.000547	37,718	948,204,903	
MH	0.001645	37,718	2,851,548,566	
1			592,315,549,363	BTU/yr
			592,315,549.36	kBTU/yr
			1,622,782,327	BTU/day
			1,622,782	kBTU/day

BUILDOUT 2040

Total VMT from CalEEMod **47,470,242**

Fleet Mix from CalEEMod for Buildout (2040; really 2035)			
Type	% of fleet	BTU Intensity (per VMT)	Total BTU
LDA	0.491908	5,214	121,752,071,254
LDT1	0.059855	6,900	19,605,186,211
LDT2	0.185077	6,900	60,620,984,853
MDV	0.131229	37,718	234,963,239,509
LHD1	0.04494	37,718	80,464,287,494
LHD2	0.007356	37,718	13,170,789,916
MHD	0.019164	37,718	34,312,808,312
HHD	0.046757	37,718	83,717,594,356
OBUS	0.003019	37,718	5,405,466,932
UBUS	0.003347	37,718	5,992,745,221
MCY	0.004084	5,214	1,010,830,194
SBUS	0.000506	37,718	905,984,189
MH	0.00276	37,718	4,941,731,942

Foonote: the 2040 analysis BTU/mile factor is based on existing year energy and will likely be lower due to improvements in state and federal improvements in fuel economy over time. Therefore, the 2040 analysis is likely conservative and the proejct increment is likely exaggerated.

1

666,863,720,382 BTU/yr
666,863,720.38 kBTU/yr

1,827,023,891 BTU/day
1,827,024 kBTU/yr

INCREMENT

74,548,171,019 BTU/yr
74,548,171 kBTU/yr

204,241,564 BTU/day
204,242 kBTU/yr

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Transportation Energy Calculations

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204,242 kBTU/yr

This file contains a description for each vehicle category in EMFAC2011. It describes which module is used to calculate each category as well as how the categories are grouped into the EMFAC2007 and Other categorization schemes. For more information contact msej@arb.ca.gov.

EMFAC2011 Veh & Tech	EMFAC2011 Vehicle	Description	Source	EMFAC2007 Vehicle	EMFAC2007 Vehicle Code	Truck / Non-Truck Category	Truck 1 / Truck 2 / Non-Truck Category		
LDA - DSL	LDA	Passenger Cars	EMFAC2011-LDV	LDA	PC	Non-Trucks	Non-Trucks		
LDA - GAS			EMFAC2011-LDV			Non-Trucks	Non-Trucks		
LDT1 - DSL	LDT1	Light-Duty Trucks (0-3750 lbs)	EMFAC2011-LDV	LDT1	T1	Non-Trucks	Non-Trucks		
LDT1 - GAS			EMFAC2011-LDV			Non-Trucks	Non-Trucks		
LDT2 - DSL	LDT2	Light-Duty Trucks (3751-5750 lbs)	EMFAC2011-LDV	LDT2	T2	Non-Trucks	Non-Trucks		
LDT2 - GAS			EMFAC2011-LDV			Non-Trucks	Non-Trucks		
LHD1 - DSL	LHD1	Light-Heavy-Duty Trucks (8501-10000 lbs)	EMFAC2011-LDV	LHDT1	T4	Trucks	Truck 1		
LHD1 - GAS			EMFAC2011-LDV			Trucks	Truck 1		
LHD2 - DSL	LHD2	Light-Heavy-Duty Trucks (10001-14000 lbs)	EMFAC2011-LDV	LHDT2	T5	Trucks	Truck 1		
LHD2 - GAS			EMFAC2011-LDV			Trucks	Truck 1		
MCY - GAS	MCY	Motorcycles	EMFAC2011-LDV	MCY	MC	Non-Trucks	Non-Trucks		
MDV - DSL	MDV	Medium-Duty Trucks (5751-8500 lbs)	EMFAC2011-LDV	MDV	T3	Non-Trucks	Non-Trucks		
MDV - GAS			EMFAC2011-LDV			Non-Trucks	Non-Trucks		
MH - DSL	MH	Motor Homes	EMFAC2011-LDV	MH	MH	Non-Trucks	Non-Trucks		
MH - GAS			EMFAC2011-LDV			Non-Trucks	Non-Trucks		
T6 Ag - DSL	T6 Ag	Medium-Heavy Duty Diesel Agriculture Truck	EMFAC2011-HD	MHDT	T6	Trucks	Truck 2		
T6 CAIRP heavy - DSL	T6 CAIRP heavy	Medium-Heavy Duty Diesel CA International Registration Plan Truck with GVWR>26000 lbs	EMFAC2011-HD			Trucks	Truck 2		
T6 CAIRP small - DSL	T6 CAIRP small	Medium-Heavy Duty Diesel CA International Registration Plan Truck with GVWR<=26000 lbs	EMFAC2011-HD			Trucks	Truck 2		
T6 instate construction heavy - DSL	T6 instate construction heavy	Medium-Heavy Duty Diesel instate construction Truck with GVWR>26000 lbs	EMFAC2011-HD			Trucks	Truck 2		
T6 instate construction small - DSL	T6 instate construction small	Medium-Heavy Duty Diesel instate construction Truck with GVWR<=26000 lbs	EMFAC2011-HD			Trucks	Truck 2		
T6 instate heavy - DSL	T6 instate heavy	Medium-Heavy Duty Diesel instate Truck with GVWR>26000 lbs	EMFAC2011-HD			Trucks	Truck 2		
T6 instate small - DSL	T6 instate small	Medium-Heavy Duty Diesel instate Truck with GVWR<=26000 lbs	EMFAC2011-HD			Trucks	Truck 2		
T6 OOS heavy - DSL	T6 OOS heavy	Medium-Heavy Duty Diesel Out-of-state Truck with GVWR>26000 lbs	EMFAC2011-HD			Trucks	Truck 2		
T6 OOS small - DSL	T6 OOS small	Medium-Heavy Duty Diesel Out-of-state Truck with GVWR<=26000 lbs	EMFAC2011-HD			Trucks	Truck 2		
T6 Public - DSL	T6 Public	Medium-Heavy Duty Diesel Public Fleet Truck	EMFAC2011-HD			Trucks	Truck 2		
T6 utility - DSL	T6 utility	Medium-Heavy Duty Diesel Utility Fleet Truck	EMFAC2011-HD			Trucks	Truck 2		
T6TS - GAS	T6TS	Medium-Heavy Duty Gasoline Truck	EMFAC2011-LDV			Trucks	Truck 2		
T7 Ag - DSL	T7 Ag	Heavy-Heavy Duty Diesel Agriculture Truck	EMFAC2011-HD			HHDT	T7	Trucks	Truck 2
T7 CAIRP - DSL	T7 CAIRP	Heavy-Heavy Duty Diesel CA International Registration Plan Truck	EMFAC2011-HD					Trucks	Truck 2
T7 CAIRP construction - DSL	T7 CAIRP construction	Heavy-Heavy Duty Diesel CA International Registration Plan Construction Truck	EMFAC2011-HD	Trucks	Truck 2				
T7 NNOOS - DSL	T7 NNOOS	Heavy-Heavy Duty Diesel Non-Neighboring Out-of-state Truck	EMFAC2011-HD	Trucks	Truck 2				
T7 NOOS - DSL	T7 NOOS	Heavy-Heavy Duty Diesel Neighboring Out-of-state Truck	EMFAC2011-HD	Trucks	Truck 2				
T7 other port - DSL	T7 other port	Heavy-Heavy Duty Diesel Drayage Truck at Other Facilities	EMFAC2011-HD	Trucks	Truck 2				
T7 POAK - DSL	T7 POAK	Heavy-Heavy Duty Diesel Drayage Truck in Bay Area	EMFAC2011-HD	Trucks	Truck 2				
T7 POLA - DSL	T7 POLA	Heavy-Heavy Duty Diesel Drayage Truck near South Coast	EMFAC2011-HD	Trucks	Truck 2				

EMFAC2011 Veh & Tech	EMFAC2011 Vehicle	Description	Source	EMFAC2007 Vehicle	EMFAC2007 Vehicle Code	Truck / Non-Truck Category	Truck 1 / Truck 2 / Non-Truck Category
T7 Public - DSL	T7 Public	Heavy-Heavy Duty Diesel Public Fleet Truck	EMFAC2011-HD			Trucks	Truck 2
T7 Single - DSL	T7 Single	Heavy-Heavy Duty Diesel Single Unit Truck	EMFAC2011-HD			Trucks	Truck 2
T7 single construction - DSL	T7 single construction	Heavy-Heavy Duty Diesel Single Unit Construction Truck	EMFAC2011-HD			Trucks	Truck 2
T7 SWCV - DSL	T7 SWCV	Heavy-Heavy Duty Diesel Solid Waste Collection Truck	EMFAC2011-HD			Trucks	Truck 2
T7 tractor - DSL	T7 tractor	Heavy-Heavy Duty Diesel Tractor Truck	EMFAC2011-HD			Trucks	Truck 2
T7 tractor construction - DSL	T7 tractor construction	Heavy-Heavy Duty Diesel Tractor Construction Truck	EMFAC2011-HD			Trucks	Truck 2
T7 utility - DSL	T7 utility	Heavy-Heavy Duty Diesel Utility Fleet Truck	EMFAC2011-HD			Trucks	Truck 2
T7IS - GAS	T7IS	Heavy-Heavy Duty Gasoline Truck	EMFAC2011-LDV			Trucks	Truck 2
PTO - DSL	PTO	Power Take Off	EMFAC2011-HD			Trucks	Truck 2
SBUS - DSL	SBUS	School Buses	EMFAC2011-HD	SBUS	SB	Non-Trucks	Non-Trucks
SBUS - GAS			EMFAC2011-LDV			Non-Trucks	Non-Trucks
UBUS - DSL	UBUS	Urban Buses	EMFAC2011-LDV	UBUS	UB	Non-Trucks	Non-Trucks
UBUS - GAS			EMFAC2011-LDV			Non-Trucks	Non-Trucks
Motor Coach - DSL	Motor Coach	Motor Coach	EMFAC2011-HD	OBUS	OB	Non-Trucks	Non-Trucks
OBUS - GAS	OBUS	Other Buses	EMFAC2011-LDV			Non-Trucks	Non-Trucks
All Other Buses - DSL	All Other Buses	All Other Buses	EMFAC2011-HD			Non-Trucks	Non-Trucks