Attachment E

Additional Documentation Attachment to Comment 1-F2

ESA

California Environmental Protection Agency

Air Resources Board

EMFAC2017

An update to California On-road Mobile Source Emission Inventory

Mobile Source Analysis Branch
Air Quality Planning and Science Division
California Air Resources Board

emfac@arb.ca.gov

June 1, 2017

Public Process

- First public workshop – June 2017
  - ❑ Model Formulation and data analysis

- Second public workshop – October 2017
  - ❑ Emission inventory impacts

- Web database tool for emissions and emission rates
  - ❑ http://www.arb.ca.gov/emfac/

- Web-based training
  - ❑ Second Quarter of 2018

- User's Guide

- Technical documentation

Agenda for Today's Workshop
(Methodology and Data Updates)

i. **Executive Summary** – Steve Zelinka and Sam Pournazeri

ii. **Fleet Characterizations**

- Light Duty Vehicles – Ehsan Hosseini
- Heavy Duty Vehicles – Sherrie Sala-Moore

iii. **Updates to Emission Rates**

- Light Duty Emission Rates – Michael Kamboures
- Heavy Duty Emission Rates and Deteriotation – Lei Zhou and Chandan Misra

iv. **Updates to Vehicle Activity Profiles**

- Light and Heavy Duty Vehicles (LDV and HDVs) Activity Profiles – Zhen Dai

v. **GHG Module** – Guihua Wang

vi. **Forecasting** – Guihua Wang

Preliminary Agenda for October's Workshop

i. Impact of Updates on PM, NOx, HC, and CO2 Inventories

ii. Final data updates (heavy duty truck emission rates and deterioration)

iii. Development of Advanced Transit Module

iv. Natural Gas Fleet in EMFAC2017

v. Update EMFAC2017 Assumptions Based on Findings from LEV 3 Midterm Review

vi. Methodologies to Reflect Impact of Regulations

vii. Future Plan for EMFAC202x

Executive Summary

- Background

- EMFAC Schedule

- Major Updates

Background

- California Air Quality Planning
  - ❑ USEPA approves EMFAC for use in California's SIPs and for Conformity Analyses
  - ❑ Can utilize California-specific MPO vehicle activity
  - ❑ Accounts for unique, California-specific regulations and emission factors
  - ❑ The 2016 Statewide SIP Strategy is based on EMFAC2014

- Rulemaking
  - ❑ Used to develop rule-specific Criteria Pollutant emission inventories

- Climate Change Planning
  - ❑ SB375
  - ❑ Scoping Plan

EMFAC Updates
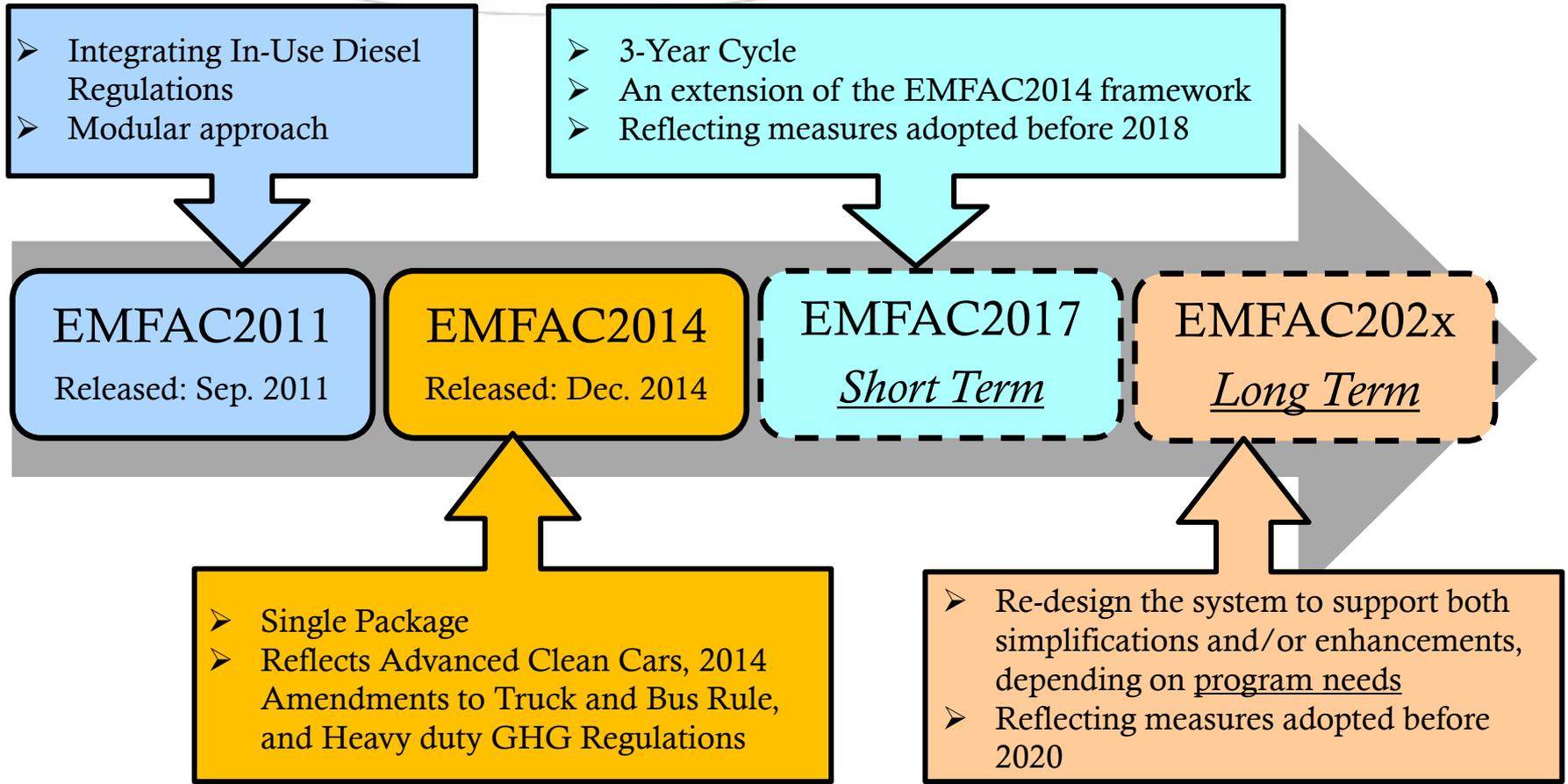
> Integrating In-Use Diesel Regulations
> Modular approach

> 3-Year Cycle
> An extension of the EMFAC2014 framework
> Reflecting measures adopted before 2018

EMFAC2011
Released: Sep. 2011

EMFAC2014
Released: Dec. 2014

EMFAC2017
Short Term

EMFAC202x
Long Term

> Single Package
> Reflects Advanced Clean Cars, 2014 Amendments to Truck and Bus Rule, and Heavy duty GHG Regulations

> Re-design the system to support both simplifications and/or enhancements, depending on program needs
> Reflecting measures adopted before 2020

EMFAC2017 Schedule – Workshops/ Model Release

- Workshops
  - ❖ 1ˢᵗ Workshop (Methodology) – June 1, 2017
  - ❖ 2ⁿᵈ Workshop (Results) – October 2017

- Releases
  - ❖ Alpha Release –Mid-June 2017
  - ❖ Beta Release – August 2017
  - ❖ Public Release – December 2017 (expected)
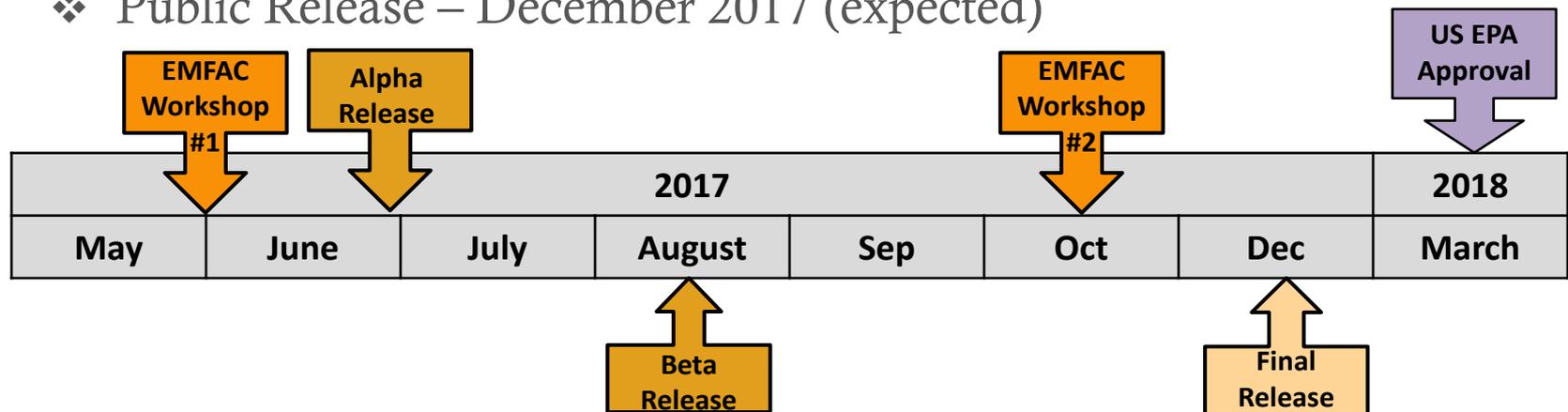
EMFAC2017 Major Updates

- ❖ Fleet Characterization
  - ❏ Updated vehicle population based on most recent DMV and IRP vehicle registration data

- ❖ In-Use Emissions
  - ❏ Extensive emission testing (on-road and chassis dynamometer) of both light and heavy duty vehicles

- ❖ Activity Profiles
  - ❏ California Household Travel Survey (2010 – 2012) – LDVs
  - ❏ Heavy Duty Activity Data Collection (2016) – HDVs

- ❖ GHG Module (**New feature!**)

- ❖ Regulations

EMFAC2017 – Fleet Characteristics

- Latest vehicle registration data from California Department of Motor Vehicles (DMV) and International Registration Plan (IRP)

- Higher population of light and heavy duty vehicles than projected by EMFAC2014 for calendar years 2013 – 2016

- Higher light truck (Crossovers and SUVs) sales in 2015 as compared to prior years
  - ❑ Car/truck splits has changed from 66%/34% in 2012 to 62%/38% in 2015

- Increased Penetration of 2010+MY Engine Heavy-Heavy Duty Trucks
  - ❑ More than 30% of in-state trucks (>33,000 lbs. GVWR) are 2010 or newer

EMFAC2017 – In-Use Emissions (Light Duty)

- Replaced CALIMFAC (California I/M simulation module) with an empirical data-driven model

- New light duty module based on data from
  - ❑ CARB in-house emission testing program
  - ❑ CARB/EPA light duty In-Use Verification Program (IUVP)

Differences between EMFAC2017 and EMFAC2014		
Higher Start Emission Rates for Criteria Pollutants (Start emissions as a function of soak time)	Lower Running Emission Rates	Much Less Emission Deterioration (Higher Durability and Better Smog Check Enforcement)

EMFAC2017 – In-Use Emissions (Heavy Duty)

- In-use vehicle emission testing is a key to CARB's emission inventory development

- Expanded our in-use emission testing programs to include more engine families and greater sample size

- In-use trucks are tested on a chassis dynamometer over eight different cycles

- CARB is also deploying PEMS to measure real-world emission rates

Differences between EMFAC2017 and EMFAC2014			
Compared to EMFAC2014, NOx emissions are significantly higher Higher PM emission (PM emissions significantly increase at high speeds)	Lower Start Emission Rates	Higher Idling Emission Rate	Higher PM Deterioration NOx Deterioration (under investigation)

EMFAC2017 – Activity Profiles (Light Duty)

- Updated activity profiles based on data from:
  - ❑ 2010 – 2012 California Household Travel Survey
  - ❑ 2001 – 2014 BAR Smog Check data
  - ❑ Telematics data provided by four major OEMs

Differences between EMFAC2017 and EMFAC2014		
Lower number of start per day (More than 50% of starts have a soak time of 60 min or less)	Lower mileage accrual rates for newer vehicles Higher for older ones	Updated mileage accrual rates for PEVs (based on ACC Midterm Review analysis) (eVMT ~ 11,000 miles/yr)

EMFAC2017 – Activity Profiles (Heavy Duty)

- Updated activity profiles based on data from CARB's contract 13-301, "Collection of Activity Data From On-Road Heavy-Duty Diesel Vehicles"

- Vehicle activity and engine information data collection from 90 vehicles in California

- Enables us to characterize heavy-duty diesel vehicles (HDDV) activity profiles by vocation

Differences between EMFAC2017 and EMFAC2014		
Higher portion of low speed activities	Lower number of cold starts per day for several major categories	Lower number of idle hours per day for most categories

EMFAC2017 – GHG Module

- New approach aligns with official CARB, U.S.EPA and IPCC methodologies

- Updated fuel efficiency assumptions based on an analysis of Federal data

- New module to calculate tailpipe CO_2 emissions using a complete combustion methodology

  ❑ Replaces previous CO_2 emission factors derived from vehicle testing.

- Updated light and heavy-duty CH_4 and N_2O emission factors using recent vehicle testing data

- N_2O estimates provided directly by the EMFAC model (previously off-model calculation)

EMFAC2017 – Emission Benefits of Regulations

- EMFAC2017 model will reflect the benefits of regulations adopted before the model release date.

- Based on the current CARB board hearing schedule, the following regulatory items are expected to be considered:
  - ❑ Amendments to Smoke Opacity (October 2017)
  - ❑ California Medium and Heavy Duty Phase 2 (October 2017)
  - ❑ Amendments to Heavy Duty Engine Warranty Requirements (December 2017)

Fleet Characterization

Light Duty Vehicles

Major Findings

- EMFAC2014 underestimated vehicle populations

  - Higher vehicle population for calendar years 2013 – 2016

- Car/truck split changed from 66%/34% in 2012 to 62%/38% in 2015

- Lower diesel light duty new vehicle sales in 2016 was observed as compared to prior years.

- LHDT new vehicle sales significantly increased in 2016 as compared to prior years.

Major Data Sources

- Historical DMV data used by EMFAC2014
- New DMV data calendar years 2013 through 2016
- Polk/IHS VINtelligence Web Service
- Ward's Database
- Certification Executive Orders

Current Status and Improvements

Completed analysis of DMV2016b (October 2016 Snapshot)

- Improvements
    - Developing a new approach for processing DMV data
    - Smog check reports no longer include vehicle weights
    - Using Ward's database to assign vehicle weights
    - Developing a new fuzzy string matching algorithm specialized for matching vehicle make and models
    - Directly using EOs to classify vehicle weight classes
    - Developing a centralized VIN decoder using Polk/IHS VINtelligence
    - Using the VIN decoder to identify fuel technology (PHEV, BEV, FCV)

- Future considerations and improvements
    - Further refining of the new string fuzzy algorithm
    - Refining data contained in the electronic EOs

DMV Processing

STEP	DESCRIPTION	PROCESS TIME
1	Identify duplicate vehicle records (10% of total records)	10%
2	Create 'Master Table' and obtain vehicle classifications from past datasets	8%
3	Create Geographical Area Index (GAI) and distribute the vehicle records among them	6%
4	Identify Off-Road vehicles including Off-road motorcycles, Recreational vehicles (ATV's, snowmobiles, etc.), Marine Vessels	4%
5	Indentifying and classifying new vehicles not seen in previous datasets (5 % of total records) • Processing and compiling Ward's data • Developing a python code to classify vehicles using vehicle weights obtained from Ward's db. • Randomly assigning against EOs • Doing research on fuzzy string matching, available methods, and customization • Developed a C++ code and modules for SQLite in order to fuzzy string matching functionality through SQL scripting	46%
6	Classify bus categories • Transit Bus • School Bus • Other Bus	13%
7	Verify & update motive power • Use POLK's VIN decoder to confirm hybrid & electrics, gas & diesel	9%
8	Update the 'pending' vehicles	4%

Major Updates
DMV Processing Improvements

- Processing time 4 to 6 months (previously 8–12 months)

- Run all unknown records through the VIN decoder

- Not all the VIN numbers can be decoded if there is miscoding in the DMV/POLK datasets

- Assign vehicle classifications directly using the EOs

Major Updates
Using VINtelligence

Before VINtelligence

MAKE_DMV	TOYT
MAKE_VINA	
MAKE_NAME	
YEAR_MODEL	2006
SERIES_CODE	
SERIES_NAME	
MODEL_CODE	
MODEL_NAME	
BODY_STYLE	UT
MOTIVE_POWER	Q
FUEL_TYPE	
GVW_CODE	
UNLADEN_WT	
INCH3_DISP	
TYPE_LIC_CODE	L0
BODY_TYPE_MODEL	4D
SOURCE	

After VINtelligence

MAKE_DMV	TOYT
MAKE_VINA	
MAKE_NAME	TOYOTA
YEAR_MODEL	2006
SERIES_CODE	
SERIES_NAME	HIGHLANDER
MODEL_CODE	
MODEL_NAME	HYBRID
BODY_STYLE	UT
MOTIVE_POWER	Q
FUEL_TYPE	B
GVW_CODE	1
UNLADEN_WT	
INCH3_DISP	201
TYPE_LIC_CODE	L0
BODY_TYPE_MODEL	4D
SOURCE	VINTEL

Major Updates
Using Electronic EOs

- Previously classifying vehicles required manually searching through the EOs.

- Now we have access to approximately 29,000 electronic EOs.

- Vehicles can now be semi-automatically classified.

Scanned EOs (PDF file)

California Environmental Protection Agency **Air Resources Board**	BAYERISCHE MOTOREN WERKE AG	EXECUTIVE ORDER A-008-0364-2 New Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles Page 3 of 3					
BMW	428i Coupe xDrive	FBMXR0130N54	1	2	PC	HCT	Partial
BMW	428i Gran Coupe	FBMXR0130N54	1	2	PC	HCT	Partial
BMW	428i xDrive Convertible	FBMXR0130N54	1	2	PC	HCT	Partial
BMW	428i xDrive Gran Coupe	FBMXR0130N54	1	2	PC	HCT	Partial
BMW	528i	FBMXR0130N54	1	2	PC	HCT	Partial
BMW	528i xDrive	FBMXR0130N54	1	2	PC	HCT	Partial
BMW	X1 sDrive28i	FBMXR0130N54	1	2	PC	HCT	Partial

Electronic EOs

MY	Make	Model	makeModel	EO	EngineFamily	VehType
2016	NISSAN	JUKE NISMO RS	JUKE NISMO RS	A-015-0718-1	GNSXV01.6GDB	PC
2016	NISSAN	JUKE NISMO ...	JUKE NISMO RS AWD	A-015-0718-1	GNSXV01.6GDB	PC
2016	NISSAN	JUKE NISMO ...	JUKE NISMO RS AWD	A-015-0718	GNSXV01.6GDB	PC
2016	NISSAN	JUKE	JUKE	A-015-0717	GNSXV01.6GDA	PC
2016	NISSAN	JUKE	JUKE	A-015-0717-1	GNSXV01.6GDA	PC
2016	NISSAN	JUKE AWD	JUKE AWD	A-015-0717	GNSXV01.6GDA	PC
2016	NISSAN	JUKE AWD	JUKE AWD	A-015-0717-1	GNSXV01.6GDA	PC
2016	NISSAN	VERSA	VERSA	A-015-0701	GNSXV01.6G4A	PC
2016	NISSAN	VERSA NOTE	VERSA NOTE	A-015-0701	GNSXV01.6G4A	PC
2016	NISSAN	LEAF	LEAF	A-015-0712	GNSXV0000LLB	PC
2016	NISSAN	LEAF	LEAF	A-015-0711	GNSXV0000LLA	PC
2016	INFINITI	QX80 AWD	QX80 AWD	A-015-0706	GNSXT05.6G9B	LDT4
2016	INFINITI	QX80 AWD	QX80 AWD	A-015-0706-1	GNSXT05.6G9B	LDT4
2016	INFINITI	QX80 2WD	QX80 2WD	A-015-0705-1	GNSXT05.6G9A	LDT4
2016	INFINITI	QX80 2WD	QX80 2WD	A-015-0705	GNSXT05.6G9A	LDT4

Major Updates
Fuel Technology

Identifying PHEV, BEV, and FCVs

- VINtelligence
  - Hybrids, fuel cell, and electric vehicles will have an "Advanced Vehicle Type Code" in VINtelligence and will be updated accordingly

- VIN patterns
  - VIN patterns will be flagged with their fuel technology and flagged in the master table

EMFAC2017 Population vs EMFAC2014 Significant Changes

- EMFAC2017 has a higher gasoline, diesel, and electric vehicle populations for years 2013 through 2016 compared to EMFAC2014.

- EMFAC2017 shows a sharp drop in the sales of new diesel PC and LDT vehicles since 2015 and a sudden increase in the sales of diesel LHDT vehicles since 2014.

- No significant change in the counts of light duty vehicles by model year is observed.

EMFAC2017 Population vs EMFAC2014 Gasoline

Passenger Cars EMFAC2017 vs EMFAC2014

Legend:
- PC EMFAC2014 GAS
- PC EMFAC2017 GAS

Forecasted for EMFAC2014

Note: data after 2012 is forecasted for EMFAC2014.

Y-axis: Population (12,000,000 – 14,500,000)
X-axis: Calendar Year (2009 – 2017)
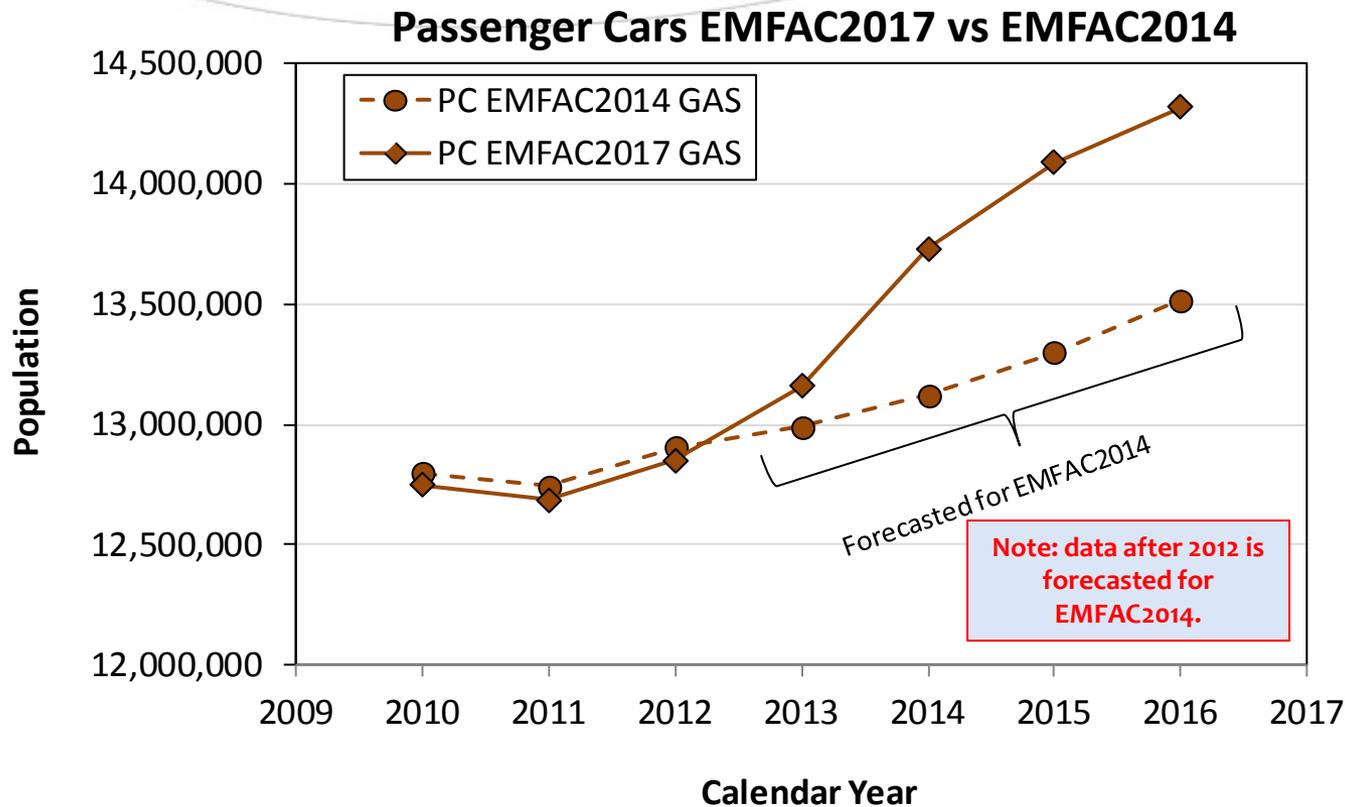
EMFAC2017 Population vs EMFAC2014 Gasoline

LDT EMAC2017 vs EMFAC2014
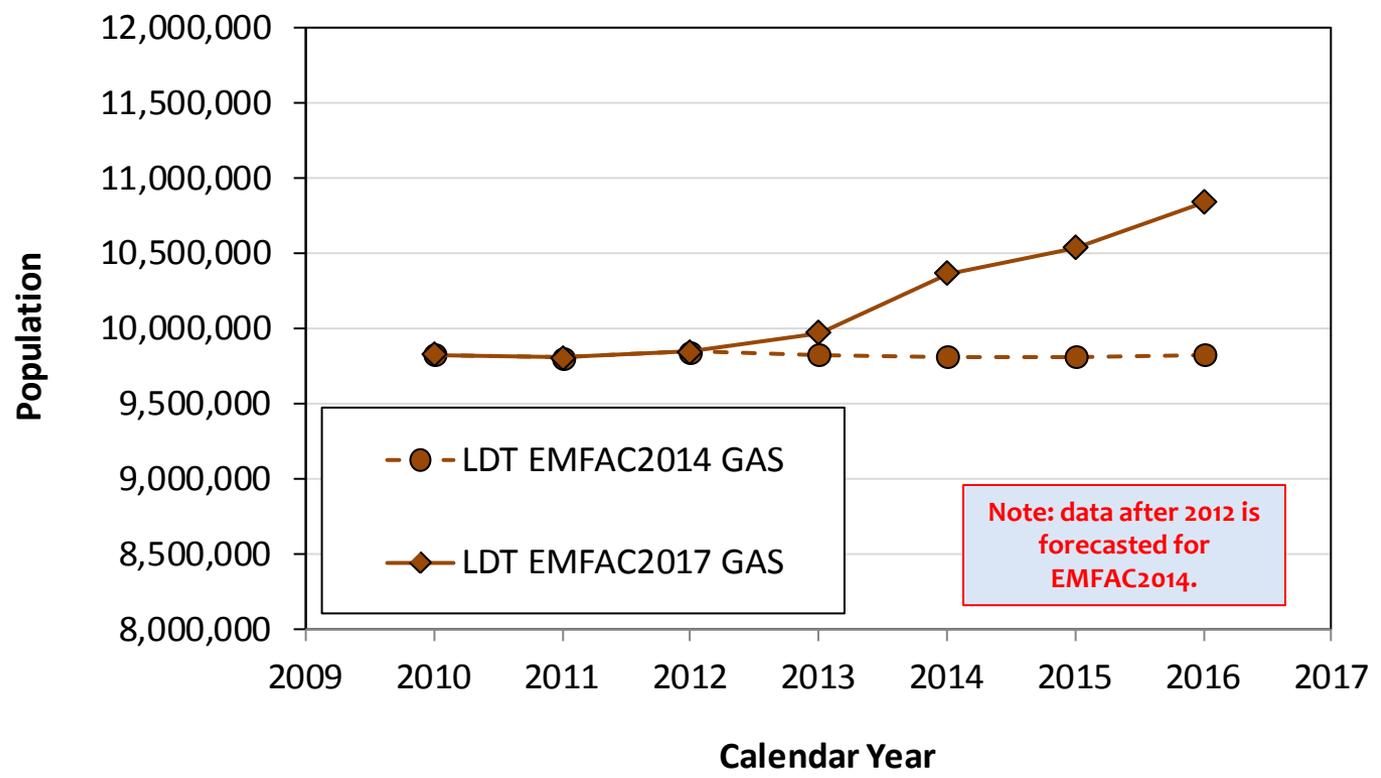
EMFAC2017 Population vs EMFAC2014 Gasoline

LHDT EMAC2017 vs EMFAC2014

Legend:
- ◆ LHDT EMFAC2017 GAS
- ● LHDT EMFAC2014 GAS

Note: data after 2012 is forecasted for EMFAC2014.

X-axis: Calendar Year

Y-axis: Population
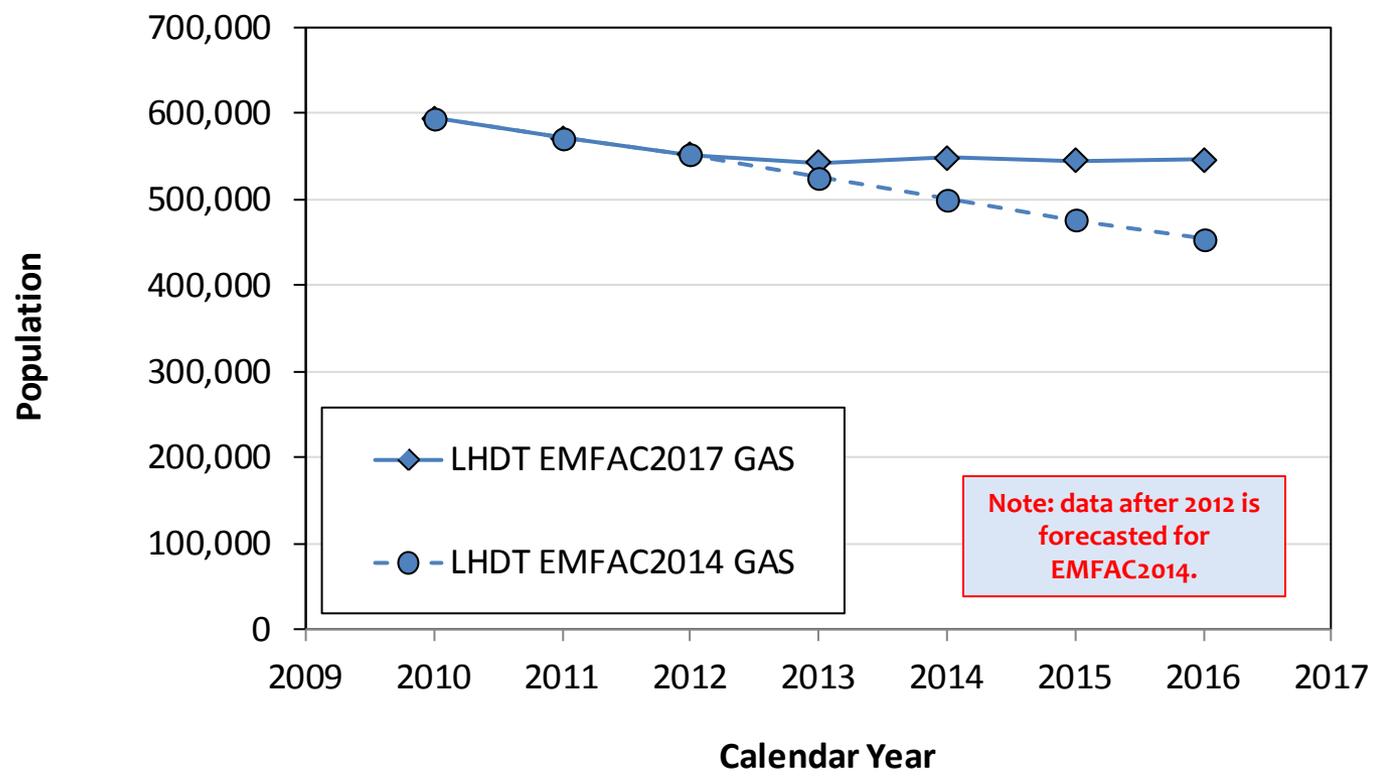
EMFAC2017 Population vs EMFAC2014 Diesel

Passenger Car EMFAC2017 vs EMFAC2014
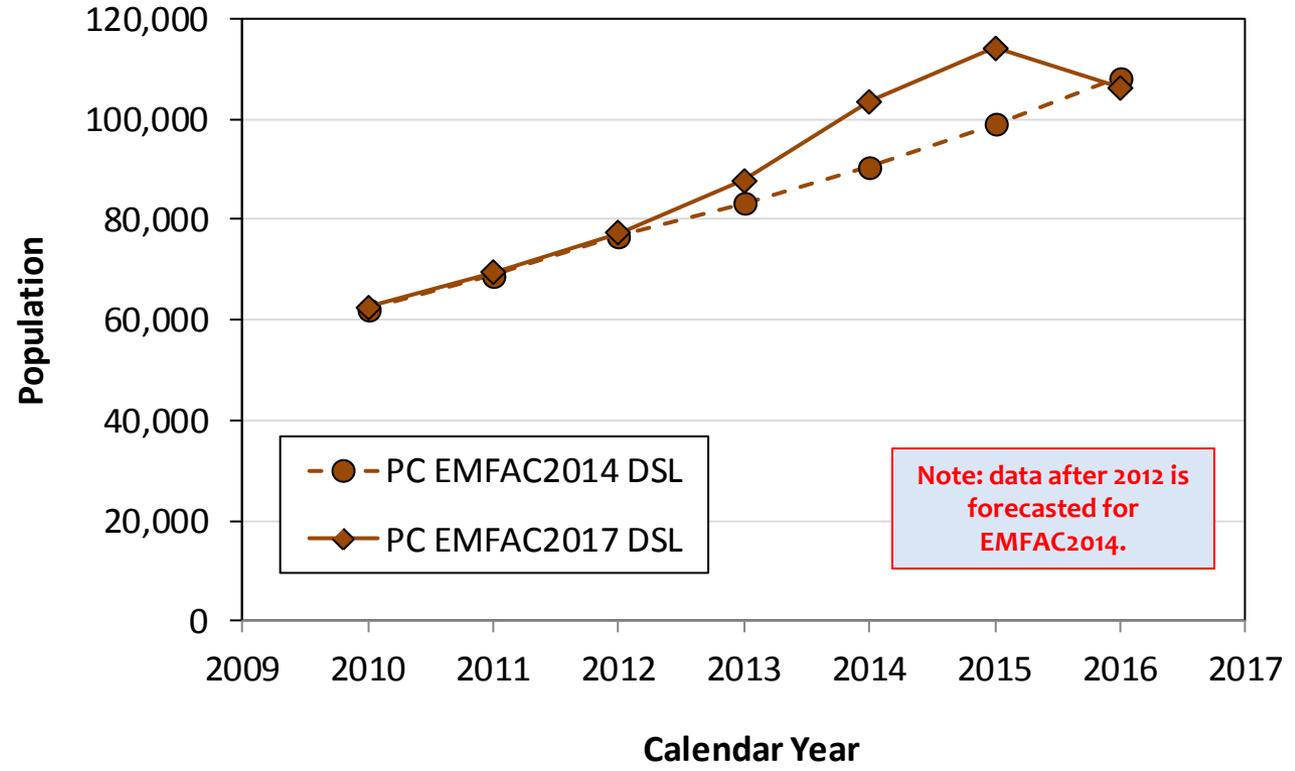
EMFAC2017 Population vs EMFAC2014 Diesel

LDT EMFAC2017 vs EMFAC2014

Note: data after 2012 is forecasted for EMFAC2014.
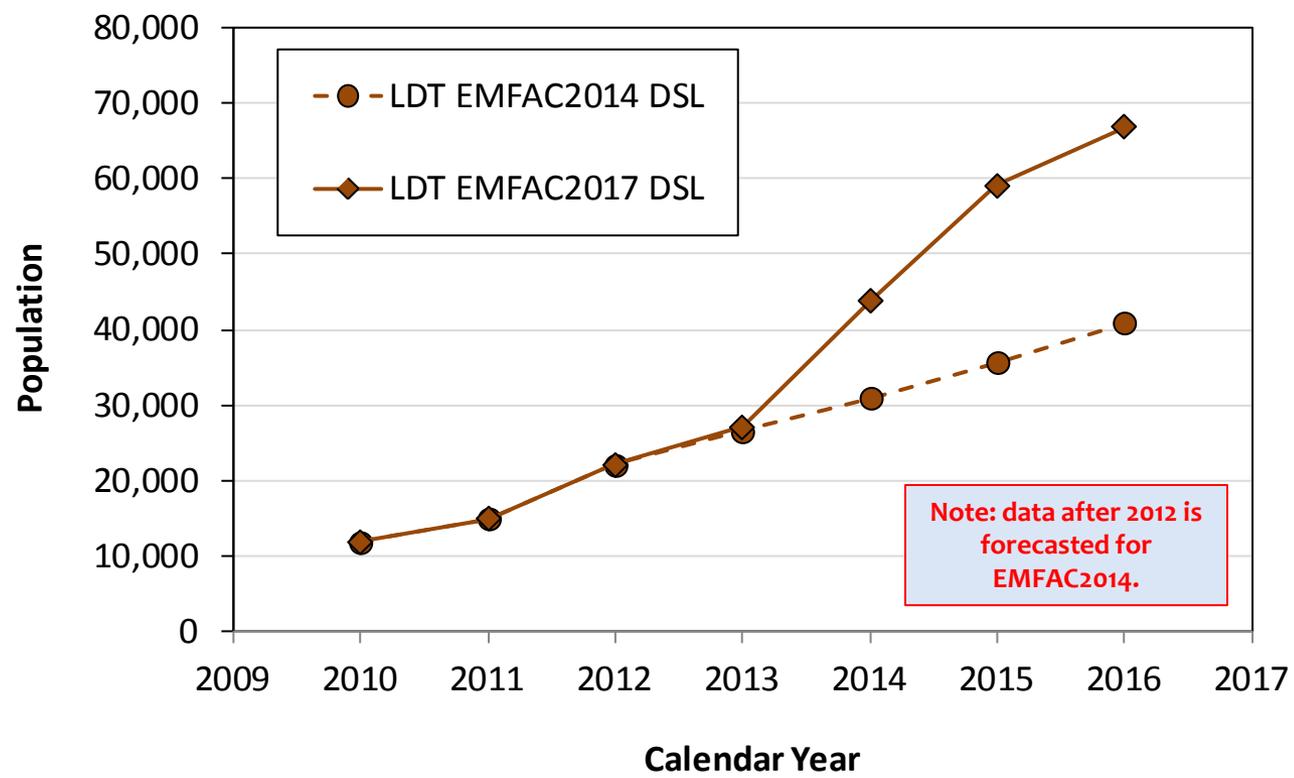
EMFAC2017 Population vs EMFAC2014 Diesel

LHDT EMFAC2017 vs EMFAC2014
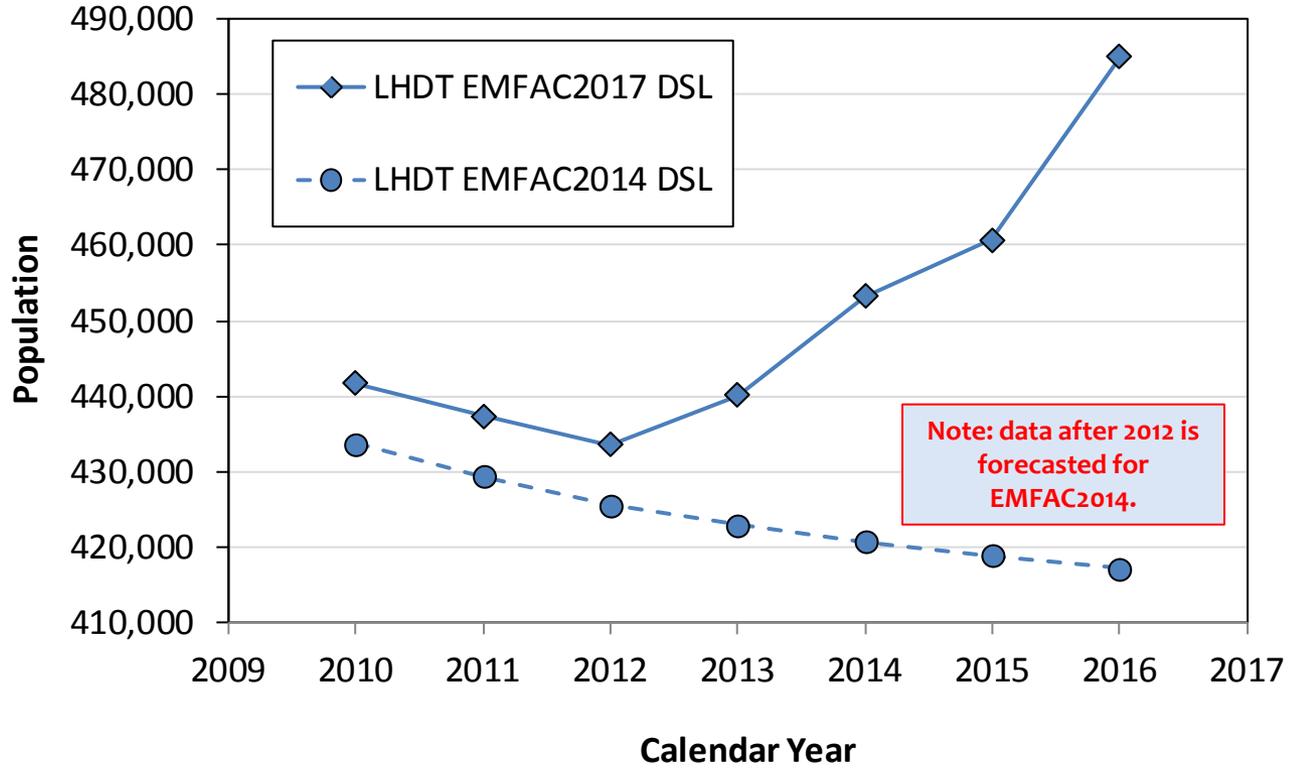
EMFAC2017 Population vs EMFAC2014 Electric

Passenger Car EMFAC2017 vs EMFAC2014

Note: data after 2012 is forecasted for EMFAC2014.
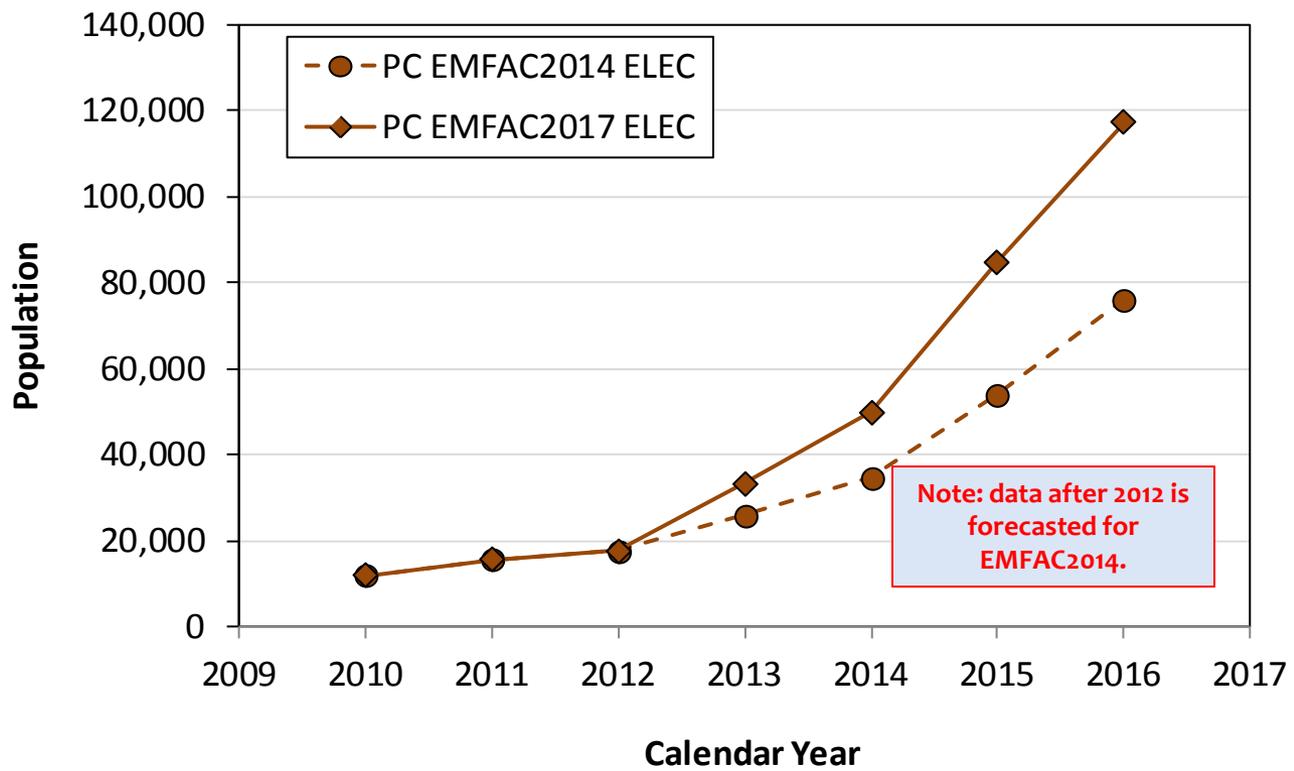
EMFAC2017 Population vs EMFAC2014 Electric Cont'd

LDT EMFAC2017 vs EMFAC2014
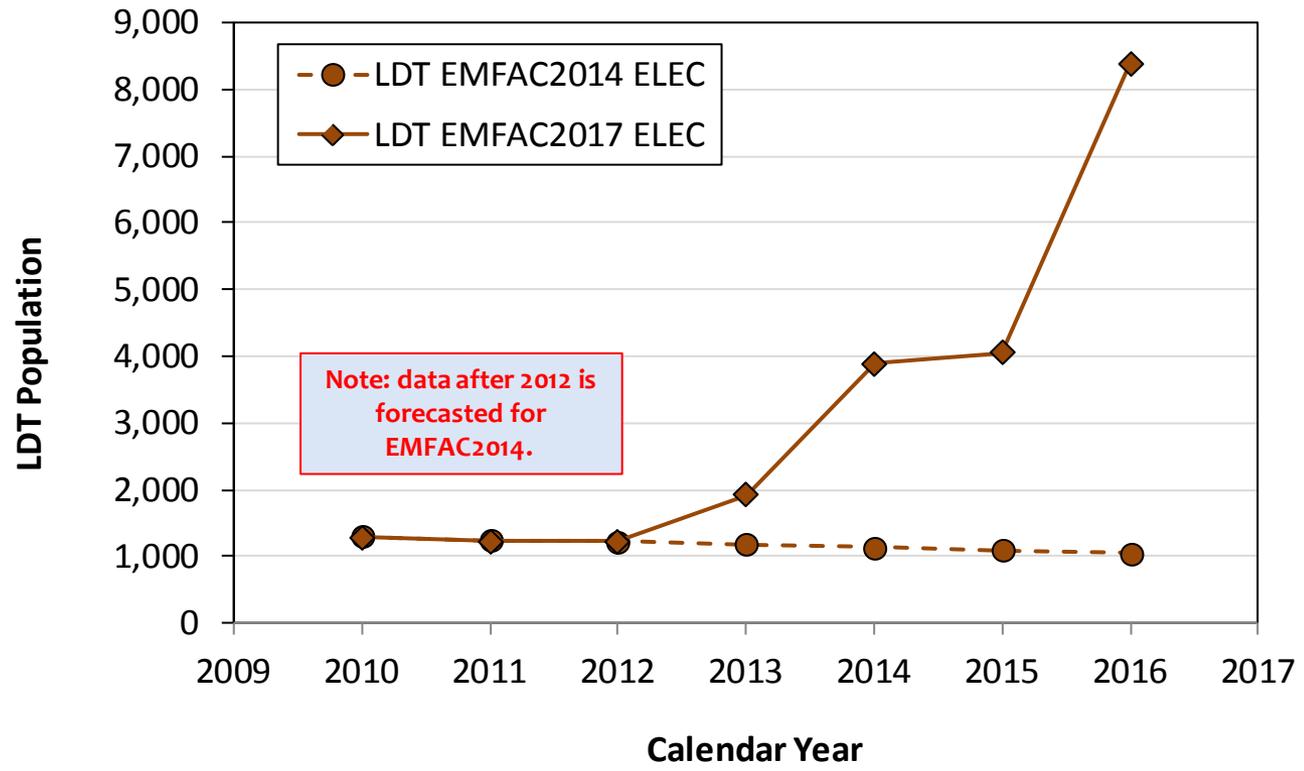
New Sales

- New Sales: Age≤0 in DMV and EMFAC

- ✓ Passenger Cars vs. Light Trucks
    - Light Trucks (≤ 8,500 lbs. GVWR)
    - Not the same definition as in the CAFÉ standards

- ✓ Light Heavy Duty Trucks (LHDT1 & LHDT2)
    - 8,501 – 14,000 GVWR

Findings

- EMFAC2014 gasoline PC and LDT new vehicle sales consistent with EMFAC2017

- Lower PC and LDT Diesel sales in 2016 as compared to prior years

- Significant increase in the LHDT sales in 2016 as compared to prior years

- No significant change in the counts of light duty vehicles by model year is observed.

New Sales – Light Duty Vehicles Gasoline Only

Note: data after 2012 is forecasted for EMFAC2014.

Legend:
- PC EMFAC2014 GAS
- PC EMFAC2017 GAS
- LDT EMFAC2014 GAS
- LDT EMFAC2017 GAS
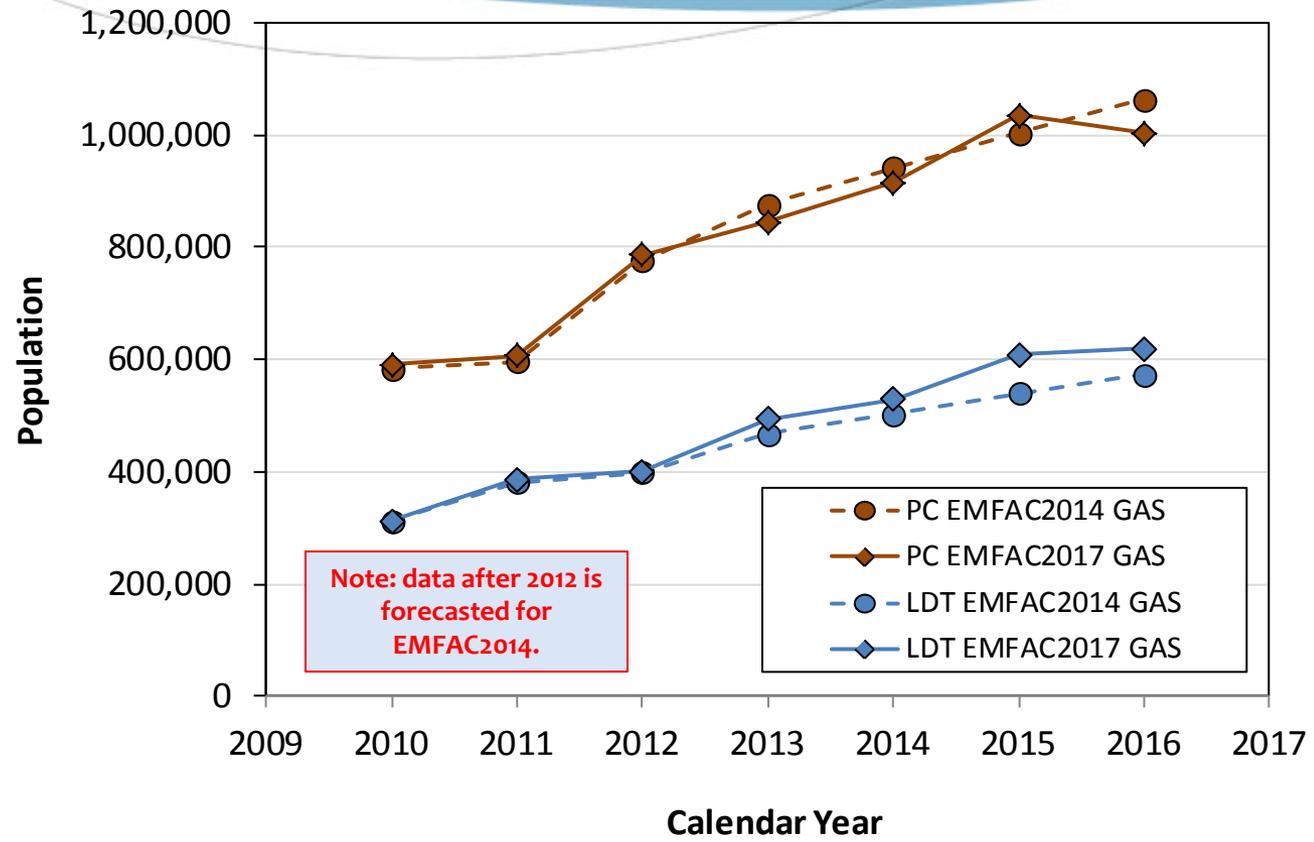
New Sales – Light Duty Vehicles Diesel Only
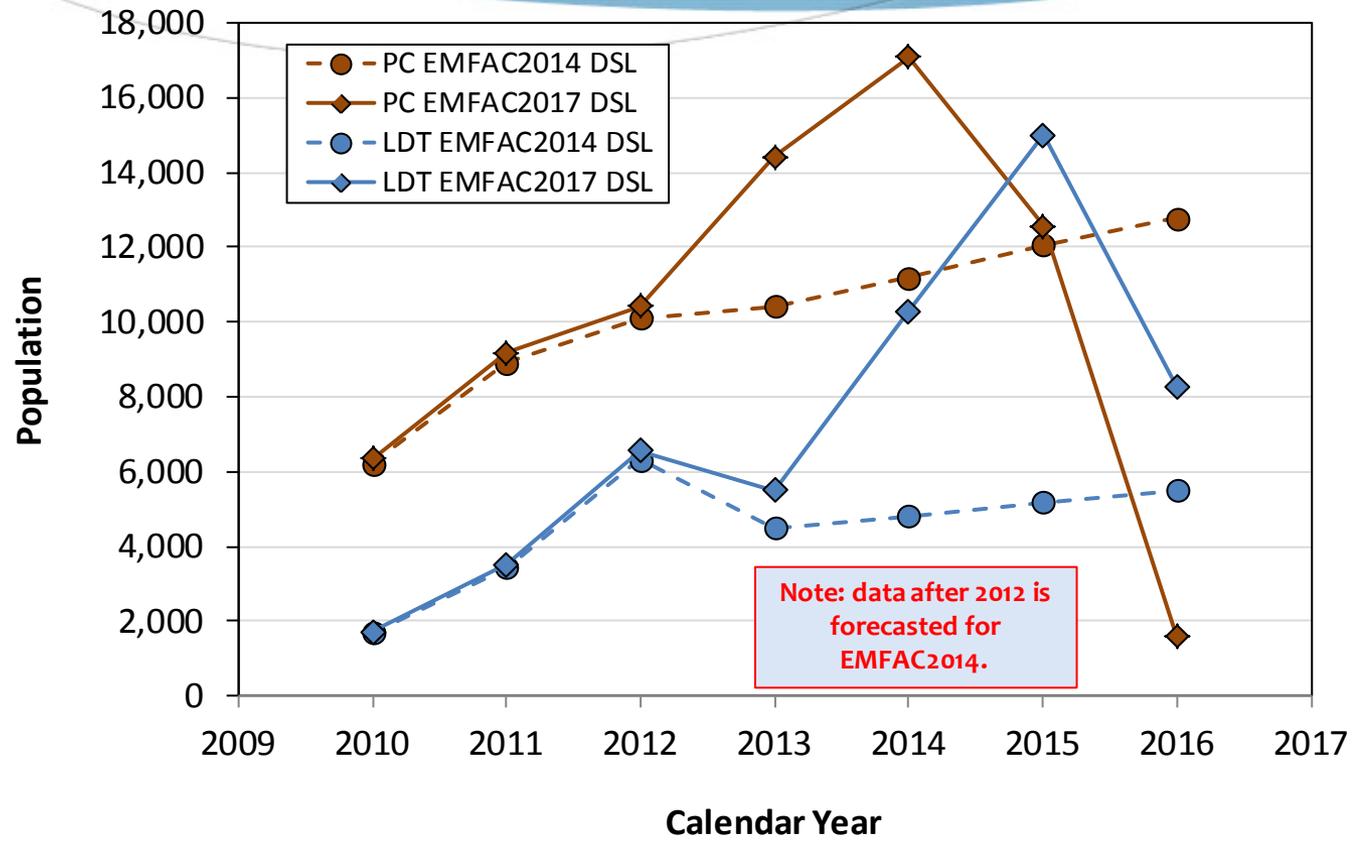
New Sales – Light Heavy Duty Trucks Diesel and Gasoline
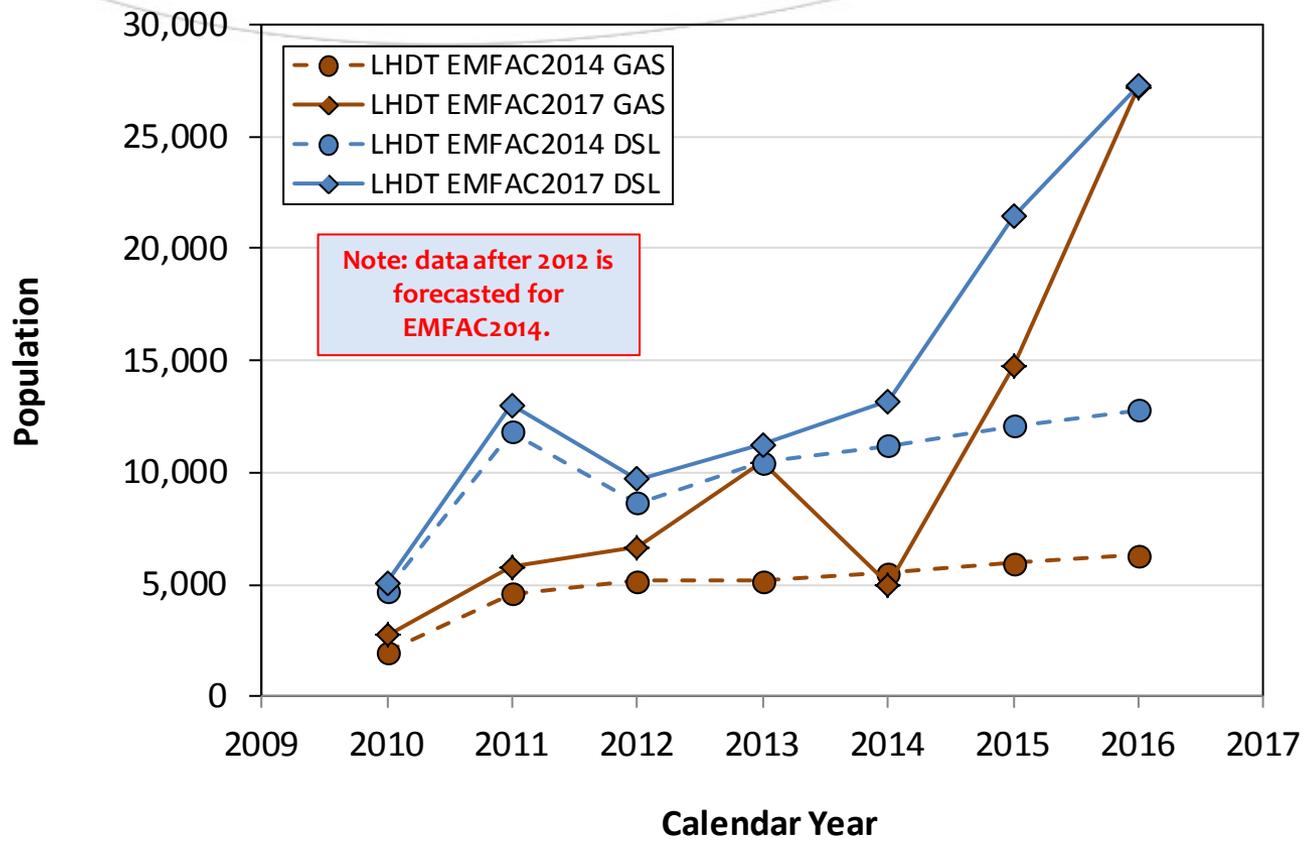
EMFAC2017 Age Distribution (All Fuel Types)

Passenger Cars - All Fuels
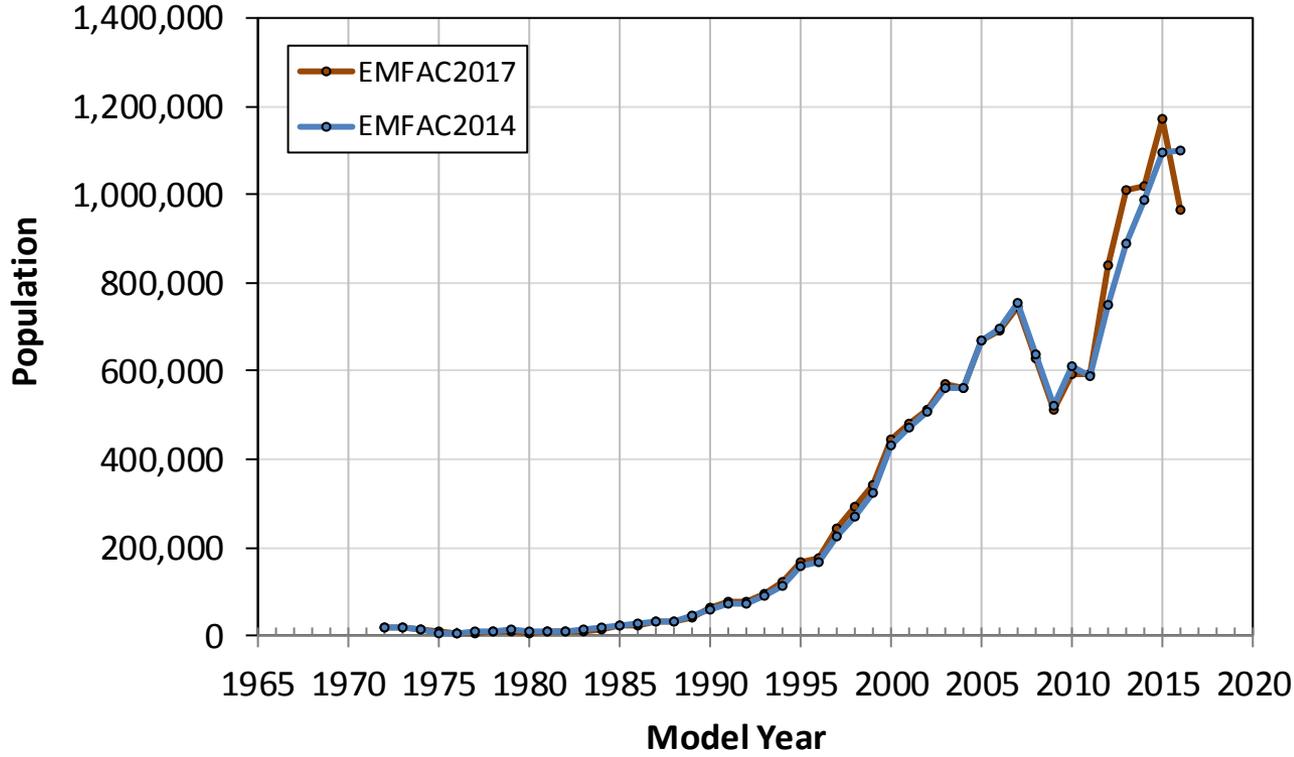
Note: EMFAC2017 age distributions are calculated using DMV2016b registration data.

EMFAC2017 Age Distribution
(All Fuel Types)

Light Trucks - All Fuels
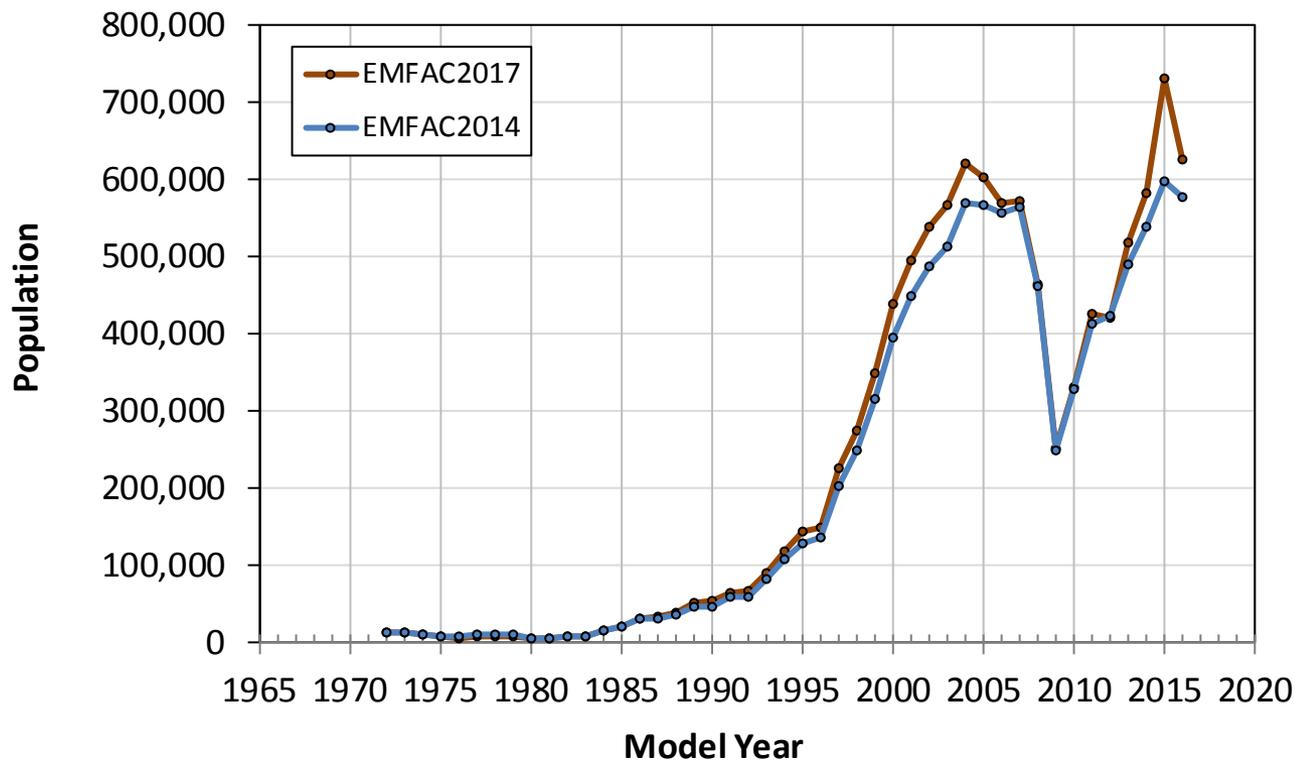
Note: EMFAC2017 age distributions are calculated using DMV2016b registration data.

EMFAC2017 Age Distribution
(All Fuel Types)

Light Heavy Duty Trucks - All Fuels
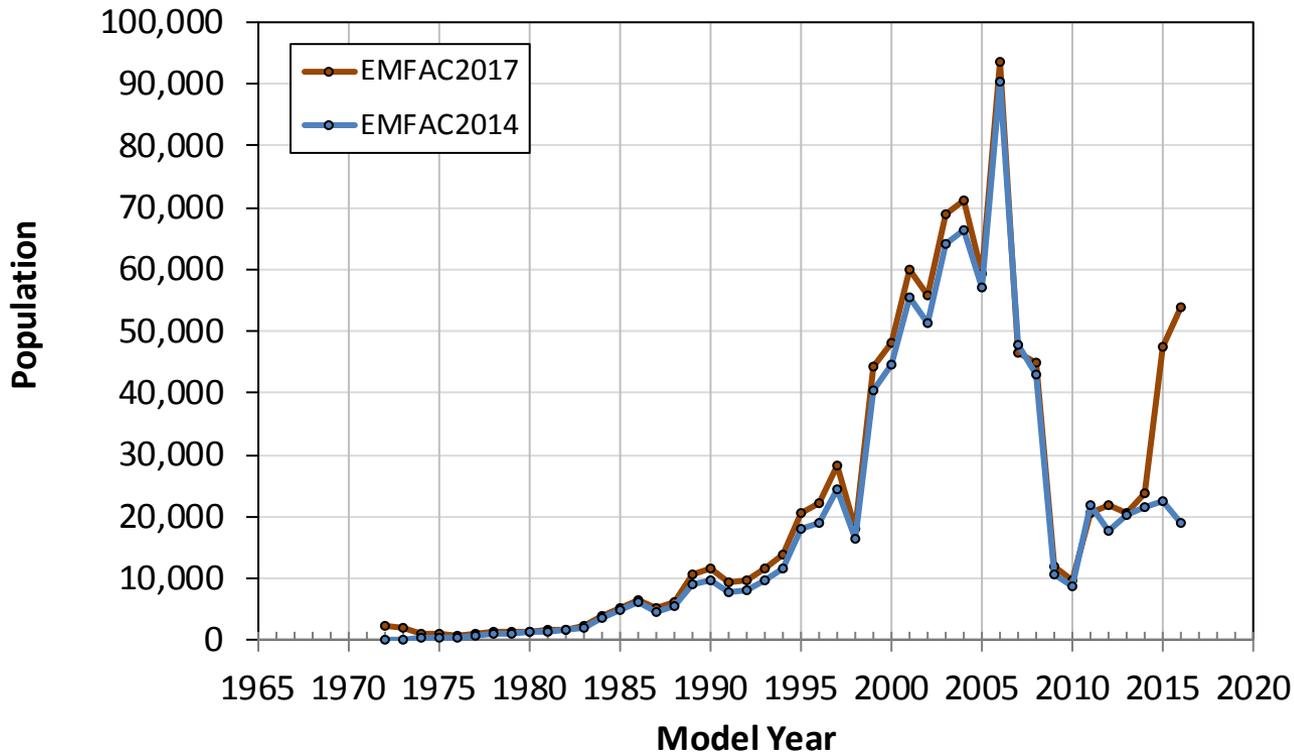
Note: EMFAC2017 age distributions are calculated using DMV2016b registration data.

Lead Staff Contact

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or

EMFAC@arb.ca.gov

Fleet Characterization

Heavy Duty Vehicles

Heavy Duty Population

- Diesel & Natural Gas Trucks and Buses

- Medium-Heavy Duty Trucks (MHD)
  - ❖ 14,001 – 33,000 lbs. GVWR

- Heavy-Heavy Duty Trucks (HHD)
  - ❖ Above 33,000 lbs. GVWR

- School Buses

- Transit Buses

- Other Buses (e.g., Motor Coach)

Major Data Sources

Data Sources include:

- Processed DMV data

- International Registration Plan (IRP)

- TRUCRS data for diesel Truck and Bus Rule

- List of VINs from Major Ports

- List of VINs from California Highway Patrol (CHP) School Bus Inspections

- National Transit Database (NTD) data

New for EMFAC2017

- **Port Trucks**: The major ports have provided VIN lists of vehicles actually visiting ports to flag as port trucks

- **Transit Buses**: New Transit Bus Module was developed using NTD data

- **School Buses**: School Bus counts were updated using CHP inspection lists and ARB Survey data

Major Findings

- Higher population of heavy duty vehicles than projected by EMFAC2014 for calendar years 2013 – 2016

- Increased Penetration of 2010+ MY Engine Heavy-Heavy Duty Trucks
  - ❑ More than 30% of in-state trucks (>33,000 lbs. GVWR) are 2010 or newer (engine model year)

- Higher population for school buses and lower population for transit buses as compared to EMFAC2014

In-state Trucks

Heavy Duty In-state Trucks
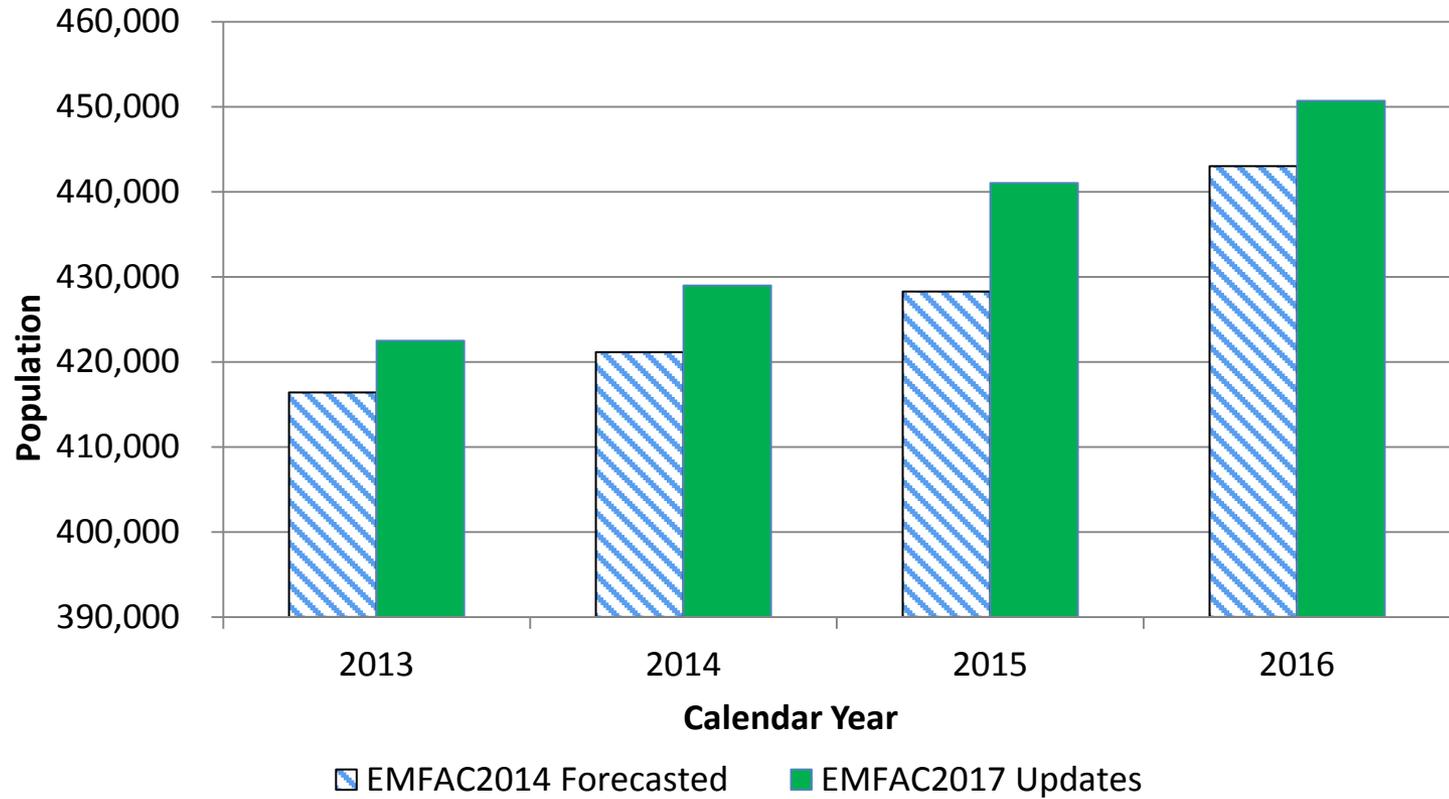
New Sales for In-state Trucks
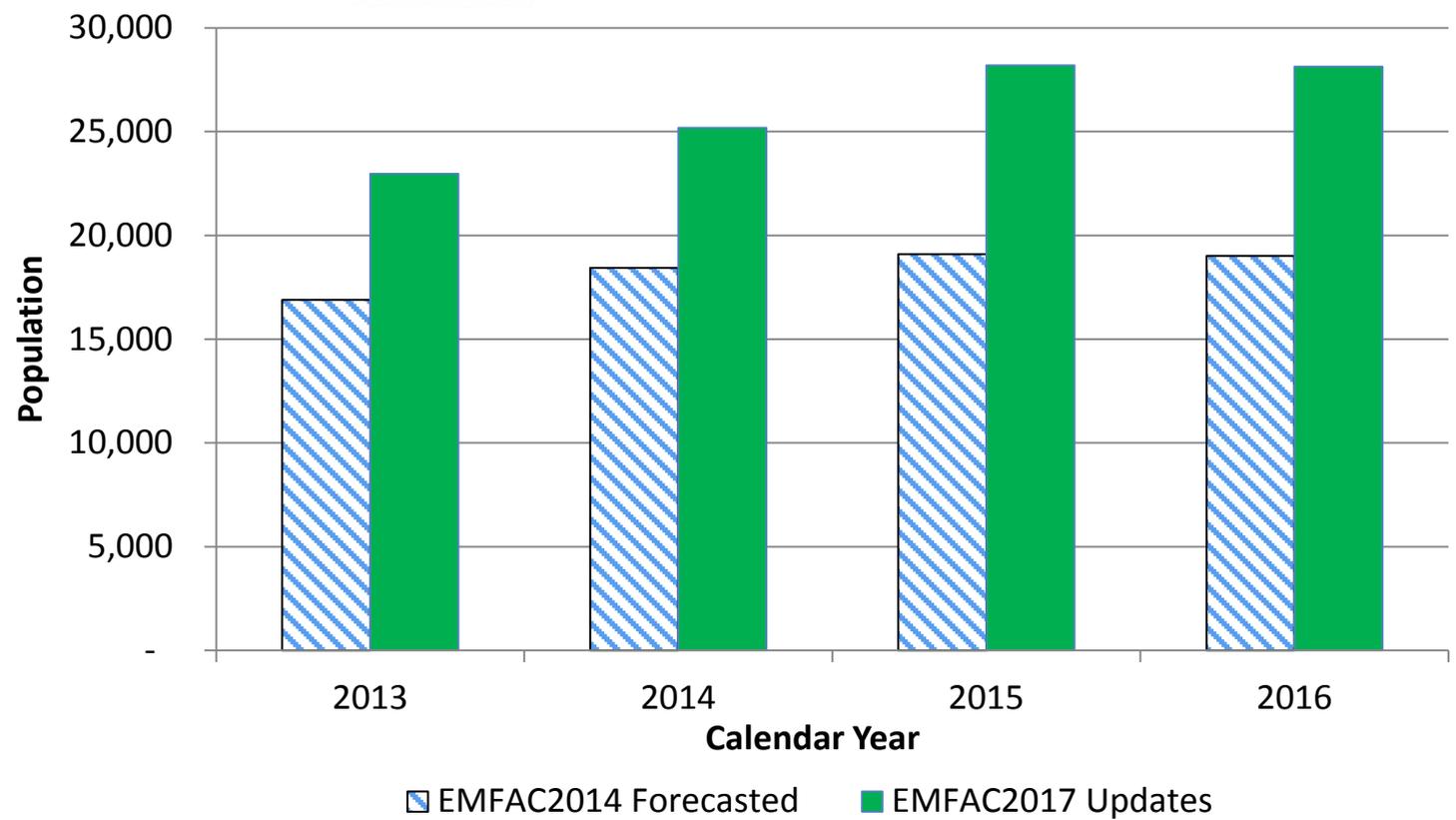
In-state Trucks MY2011 & Newer
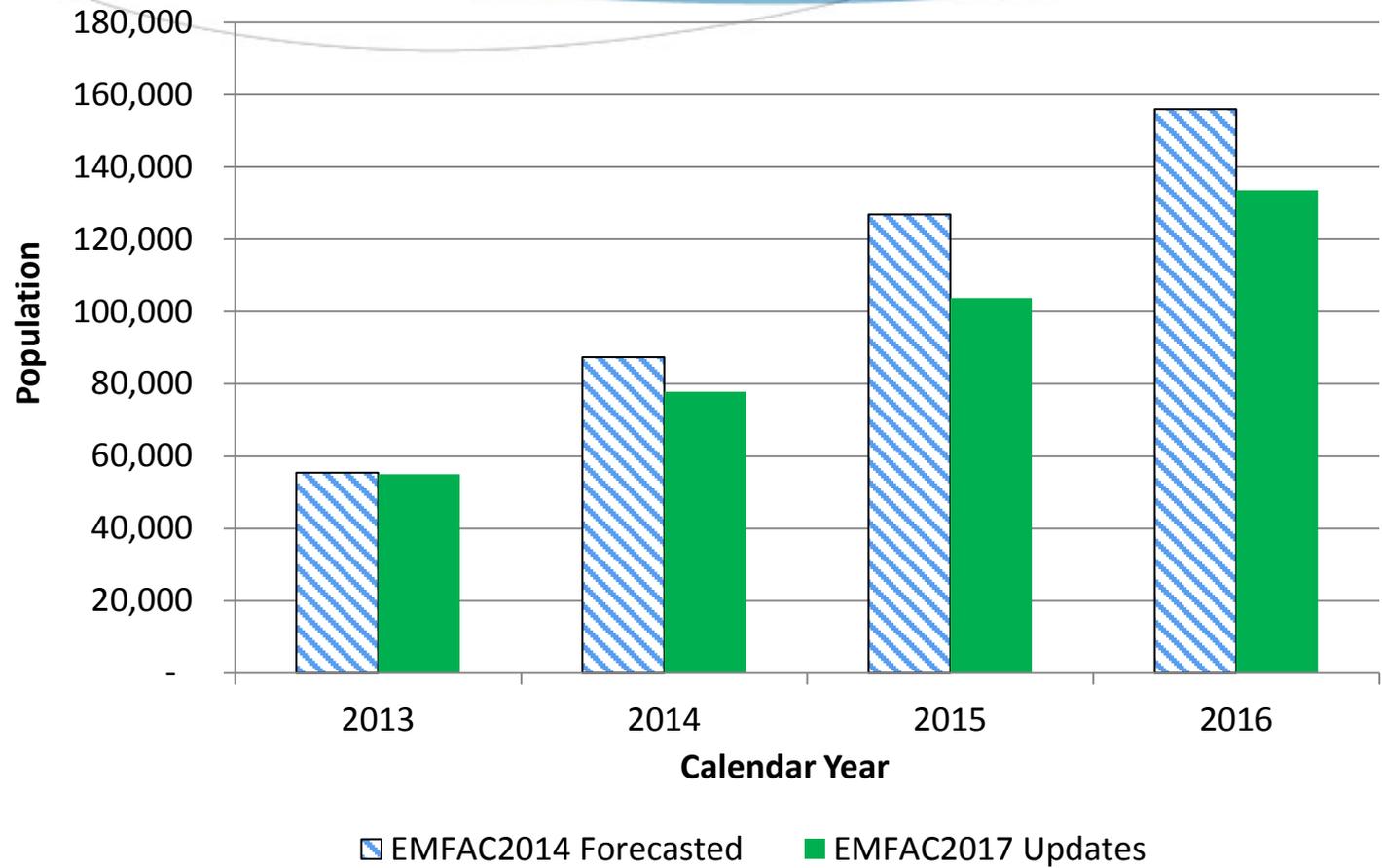
Average Ages of In-state Trucks

- Port Trucks & Instate Non-Tractors are a bit older in the new base year of 2016
  - MY2007 or newer engines by 1/1/2014 to meet drayage rule requirements
  - New vehicle sales decreased during recessionary years

- HHD Tractors are newer in New Base Year=2016
  - Truck and Bus rule requires PM filters and MY2010 engine replacement vehicles from CY2012 to CY2023

- All MHD & HHD trucks have to meet MY2010 engine requirement by January 1, 2023

Fleet Group	CY2012* Average Age	CY2016** Average Age
HHD Instate Port Trucks	4.8	5.6
HHD Instate Tractor	12.1	9.6
MHD Instate	10.8	11.3
HHD Instate Single	13.6	13.9
* Base Year for EMFAC2014		
** Base Year for EMFAC2017		

Additional Documentation Attachment to Comment Letter 1-F2

CY2016 Age Distribution for Instate Trucks
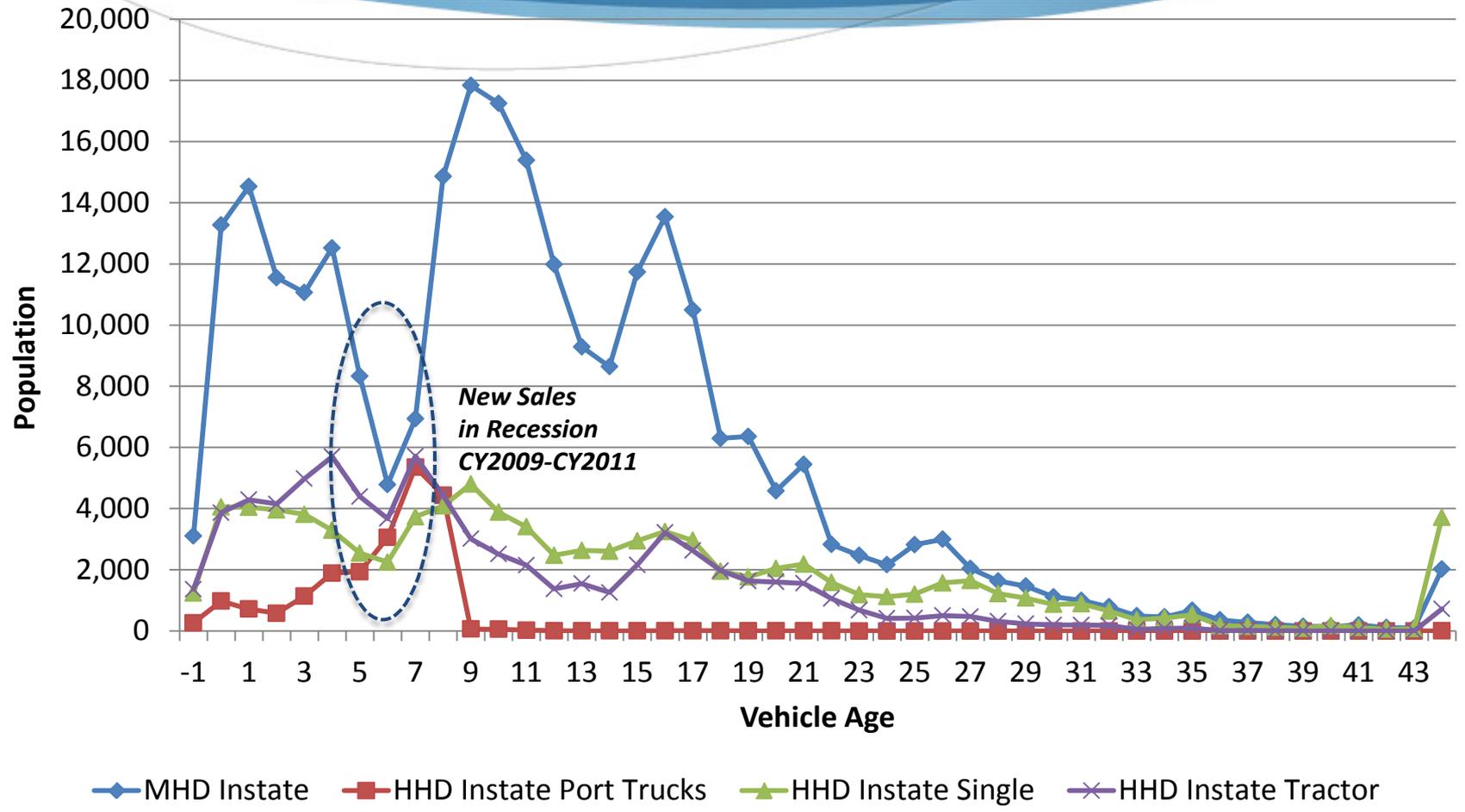
Inter-state Trucks

Heavy Duty CA IRP Trucks
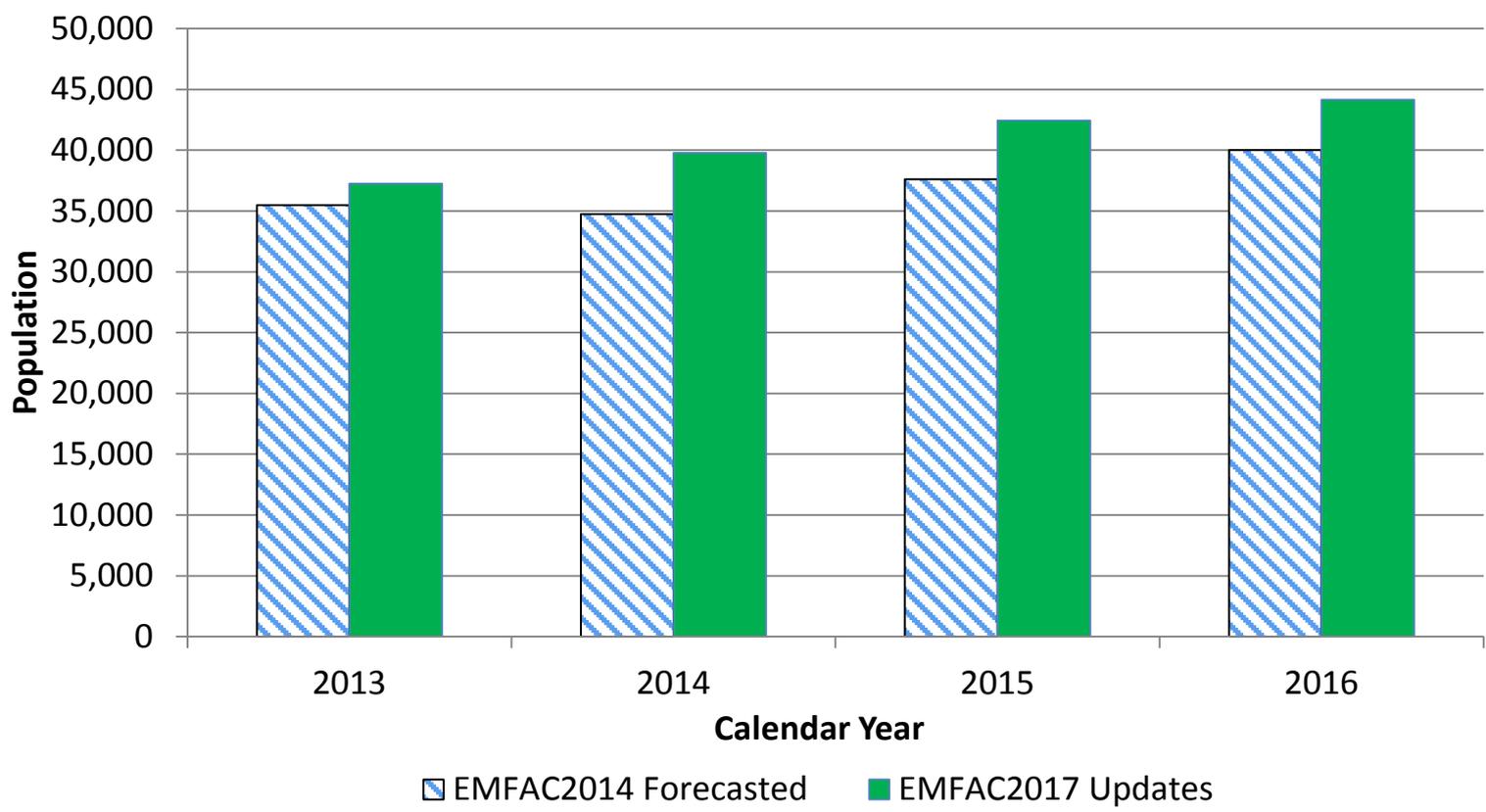
Average Ages of CA IRP Trucks

- MHD & HHD Tractors are newer in New Base Year=2016

Fleet Group	CY2012* Average Age	CY2016** Average Age
MHD CA IRP	7.1	6.8
HHD CA IRP	7.5	5.7
* Base Year for EMFAC2014		
** Base Year for EMFAC2017		

Heavy Duty Out-of-State Trucks
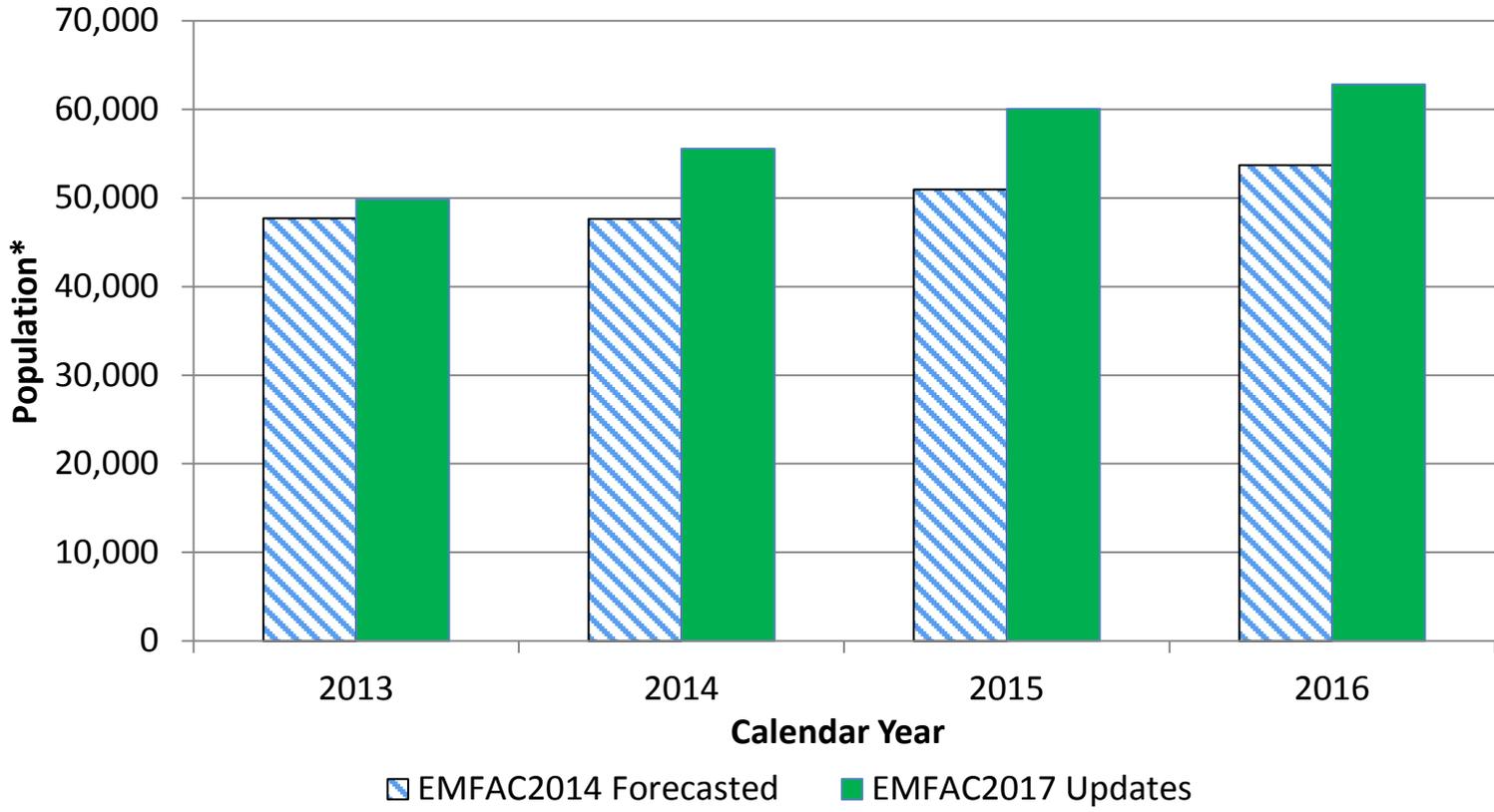
*Population of out-of-state trucks operating in California on a typical weekday

Buses

New Transit Bus Module

- Data Source = National Transit Database (NTD) https://www.transit.dot.gov/ntd
  - Provides California Transit Data for CY2000 – CY2015
    - All transit agencies receiving or benefit from federal §5307 or §5311 grants are required to report data to NTD
    - Provides fleet inventory data delineated by vehicle type, service mode, manufacturer, model, seating capacity, etc.
    - Consistent with EMFAC classification: school bus, motor coach and all other buses categories are excluded
    - CY2015 used as base year for forecasting future population

CY2015 Base Year Transit Bus Inventory

Legend:
- Zero Emission Bus (ZEB)
- Natural Gas
- Diesel
- Gasoline

Categories: Articulated Bus, Bus, Cutaway
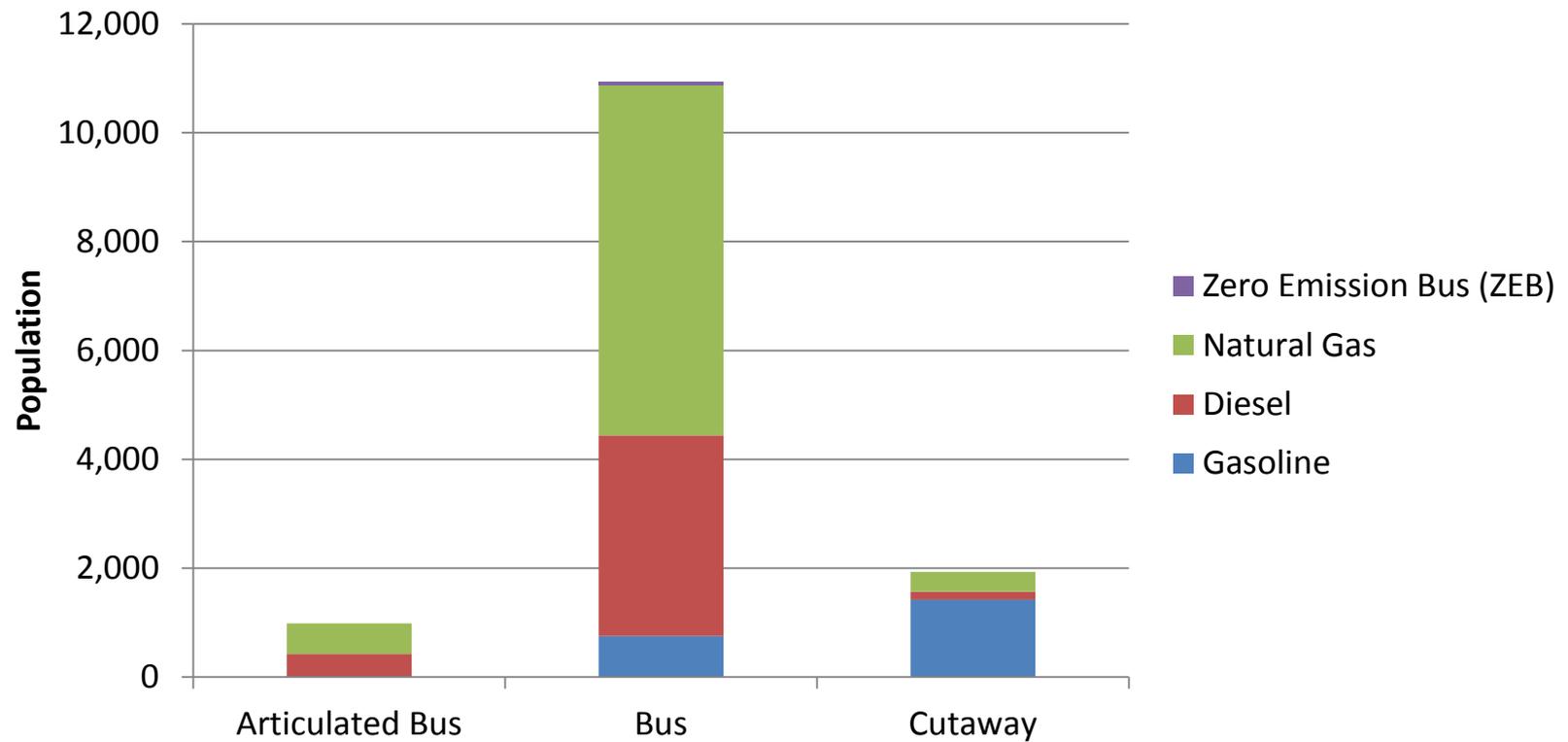
Update CHP School Bus Lists
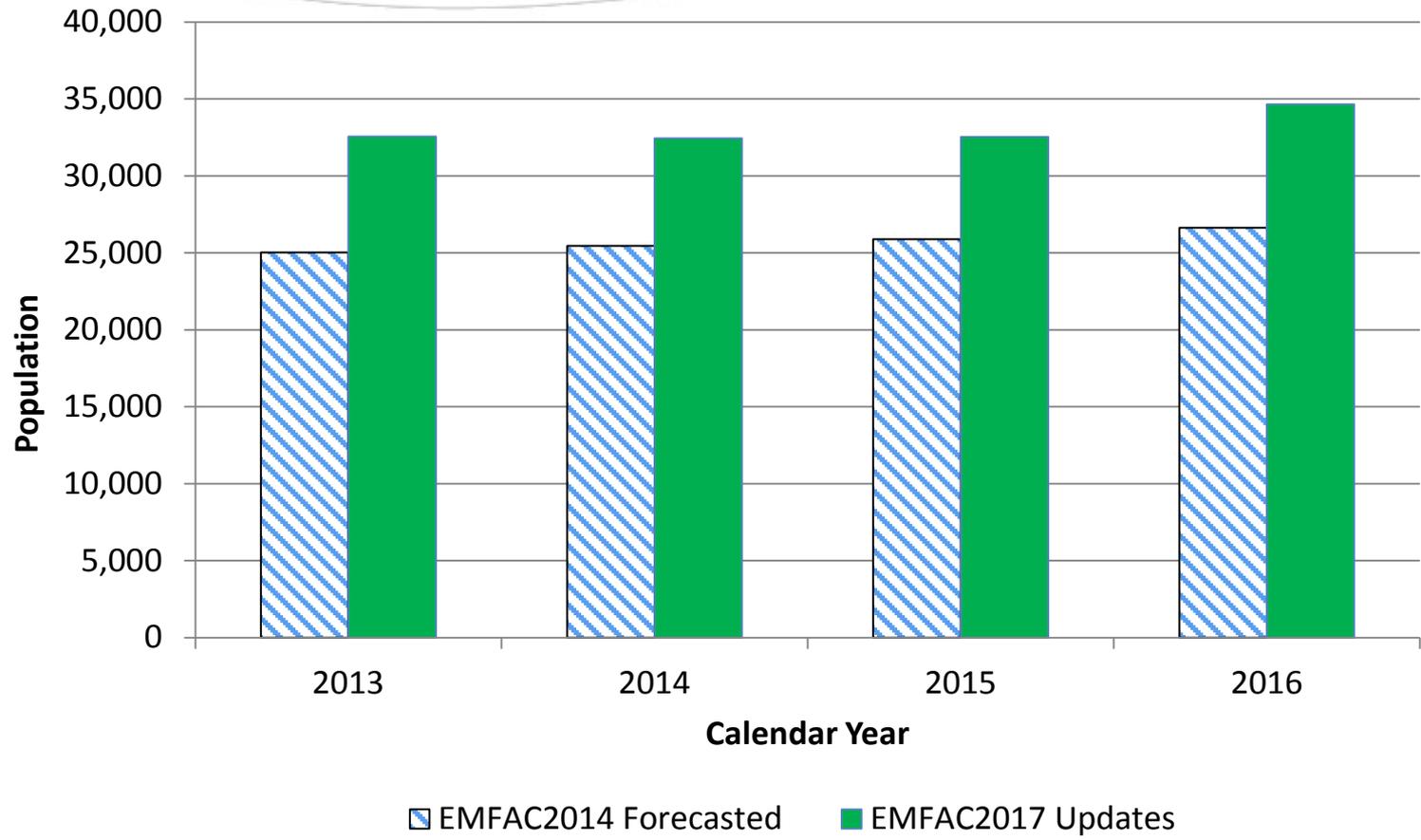
Truck and Bus Rule

- Enforcement analysis indicated 25 to 30% of diesel trucks in California may not be in compliance with Truck and Bus Rule

- SB1 will tie DMV registration to Truck and Bus Rule Compliance by CY2020

- Staff are working to update Truck and Bus Compliance Assumptions in EMFAC2017

(In Progress)

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Emission Rates

Light Duty Vehicles

EMFAC LD Exhaust Emissions

EMFAC assumes two operational modes: stabilized running mode and starts mode

- Stabilized running mode
    - Engine and catalyst at normal operating temperatures
    - Varies by speed, temperature, humidity, AC on/off
- Starts mode
    - Occurs in the time period immediately after ignition
    - Varies by the "soak" length (the time in which the vehicle has been sitting) and by temperature

Running Emissions = RUNEX (g/mi) * VMT(mi)

Starts Emissions = STREX (g/start) * Trips (starts/day)

Major Update to EMFAC

EMFAC no longer estimates Inspection and Maintenance (I/M) benefits

- Previously, the CALIMFAC module calculated with-I/M emission rates by simulating I/M on top of no-I/M emission rates

- No-I/M emission rates are no longer available.

All Vehicles subject to smog check program, so I/M benefits implicit

EMFAC LD emission rates now empirical

- Developed from chassis dynamometer testing of LD vehicles

Light-Duty Emission Rates in EMFAC

Light-duty vehicle <u>exhaust</u> emissions computed using base emission rates (BERs) from the California Unified Cycle (UC)

- HC, NOx, PM, CO, GHGs, and other pollutants

"Cold Start" "Stabilized" "Hot Start"

12+ hr soak

10 min soak
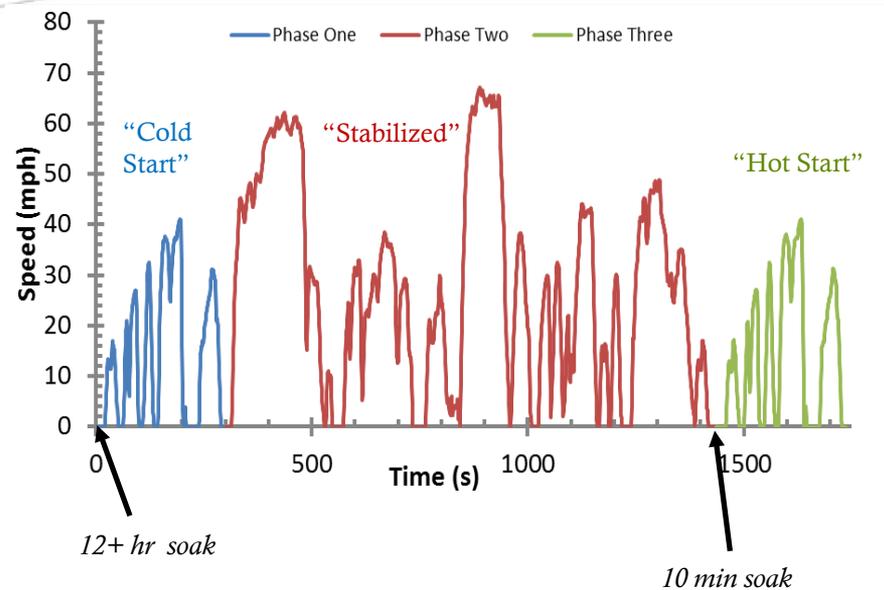
UC_{P1} Duration: 1.2 mi, 300 s
UC_{P2} Duration: 8.6 mi, 1135 s
UC_{P3} Duration: 1.2 mi, 300 s

EMFAC<u>2014</u>

UC Phase 1 (UC_{P1}): "<u>starts emissions</u>"
UC Phase 2 (UC_{P2}): "<u>running emissions</u>"
UC Phase 3 (UC_{P3}): not used

EMFAC2014 $\Rightarrow$ EMFAC2017

New odometer dependent UC_{P1}, UC_{P2}, and UC_{P3} BERs have been developed

- For Low Emission Vehicle I (LEV1), **LEVII**, and LEVIII vehicles
- For **HCs**, **NOx**, CO
- New Data Sources
  - Manufacturer In-Use Verification Program (IUVP)
  - CARB's Vehicle Surveillance Program (VSP)

- Deterioration Modeling: 3-tier emission regime approach replaces EMFAC2014's 5-tier approach

A new method for computing cold start emission rates

- $UC_{P1\text{-}300s}$ – $UC_{P3\text{-}300s}$ replaces $UC_{P1\text{-}100s}$

Revised soak correction factor curves developed to model warm starts

3-Takeaways

(1) HC and NOx running exhaust emission rates are well below EMFAC2014 estimates

*Deterioration almost negligible for LEVII LEVs and LEVII ULEVs

(2) HC and NOx starts exhaust emission rates are well above EMFAC2014 estimates for LEVII ULEVs and SULEVs

*HCs: LEVII ULEVs: 3.6x, LEVII SULEVs: 5.5x

*NOx: LEVII ULEVs: 3.1x, LEVII SULEVs: 10.6x

(3) NOx Starts emissions are more dependent on soak time than assumed in prior EMFAC versions

*Higher when preceded by soaks > 30 min

*Lower when preceded by soaks < 30 min

Development of New UC BERs

IUVP

- Data collected from 1000s of **FTP-75** tested in-use vehicles

- Test results sorted by vehicle certification standard (LEV1 ULEV, etc.) and odometer

- Composite **FTP-75** ERs used to further segregate vehicles into **3 Emission Regimes bins**

- Bin counts weighted using California vehicle sales data

  - Weighted counts used to develop **Regime Fraction (RF) equations**

VSP

- Data collected from hundreds of FTP and UC tested in-use vehicles

- Staff sorted test results by vehicle certification standard

- Composite **FTP-75** ERs used to further split vehicles into 3 Emission Regimes bins

- Average UC_{P1}, UC_{P2}, UC_{P3} ERs computed for each regime

- RFs, versus odometer, coupled with regime emission rates to derive odometer dependent BERs

Emission Regime	Range	MIL Status
Normal	0 to 1.0 x Std.	No MIL
Moderate	1.0 to 2.0 x Std.	No MIL
High	> 2.0x Std.	CHECK

LEVII SULEV Regime Fractions

- High Regime Sales Weighted
- Moderate Regime Sales Weighted
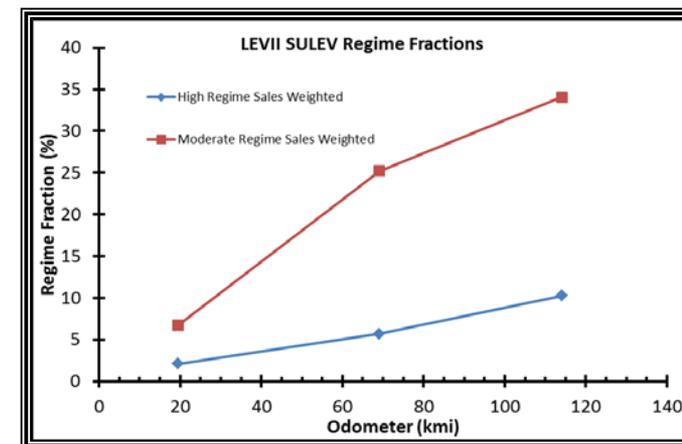
$$BER(odo) = RF_{Normal}(odo)*ER_{Normal} + RF_{Moderate}(odo)*ER_{Moderate} + RF_{High}(odo)*ER_{High}$$

Running Exhaust Emission Rates

HC Running Exhaust ERs

$HC\ Running\ Exhaust\ ER = HC\ UC_{P2}\ BER\ (odo)$

LEVII LEV HC UC Bag 2

LEVII ULEV HC UC Bag 2

LEVII SULEV HC UC Bag 2
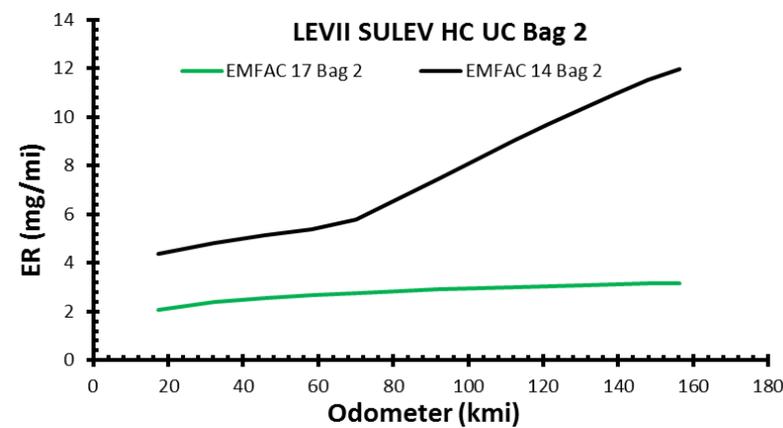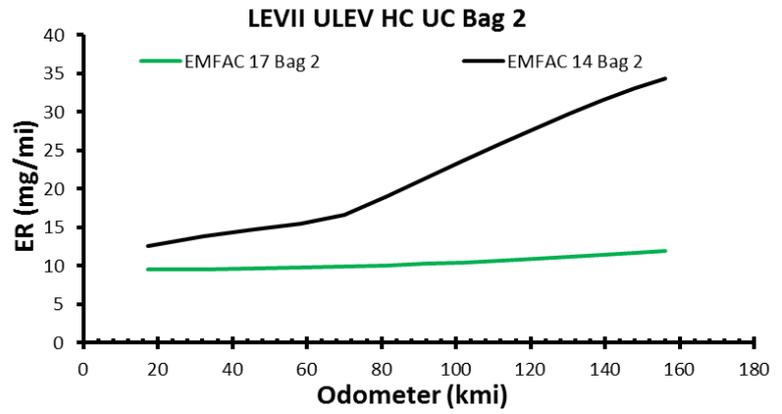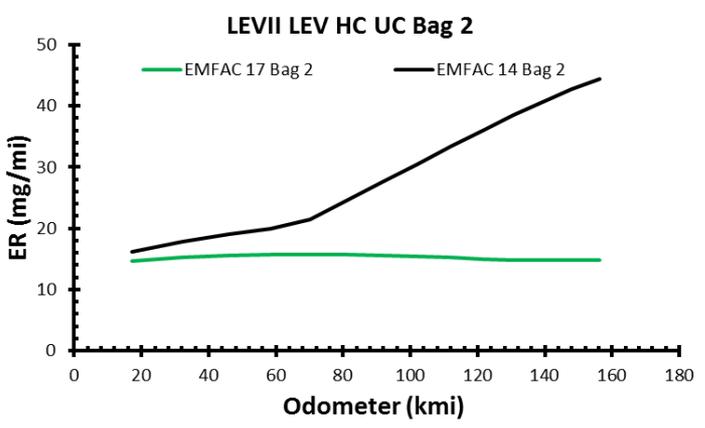
$HC\ UC_{P2}$ emission levels *below* previous assumptions

$HC\ UC_{P2}$ emissions *independent* of odometer

NOx Running Exhaust BERs

$NOx\ Running\ Exhaust\ ER = NOx\ UC_{P2}\ BER\ (odo)$

LEVII ULEV NOX UC Bag 2

LEVII LEV NOX UC Bag 2

LEVII SULEV NOX UC Bag 2
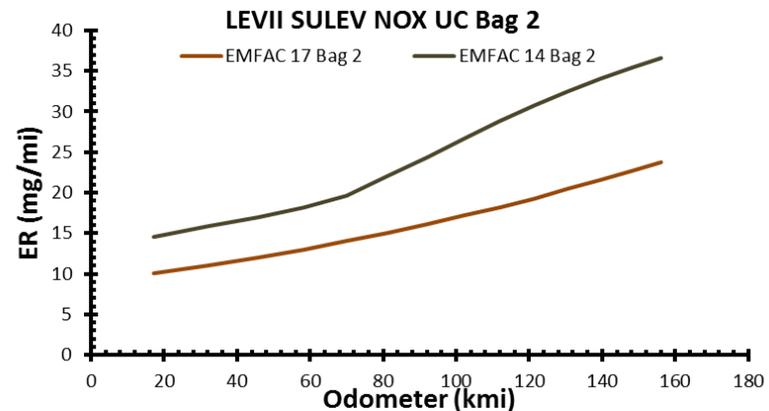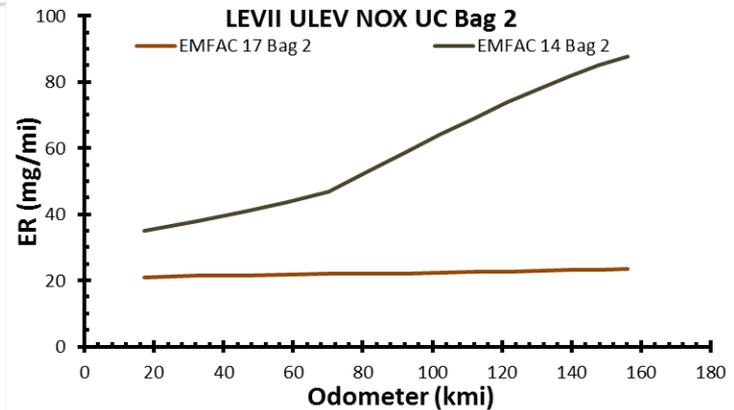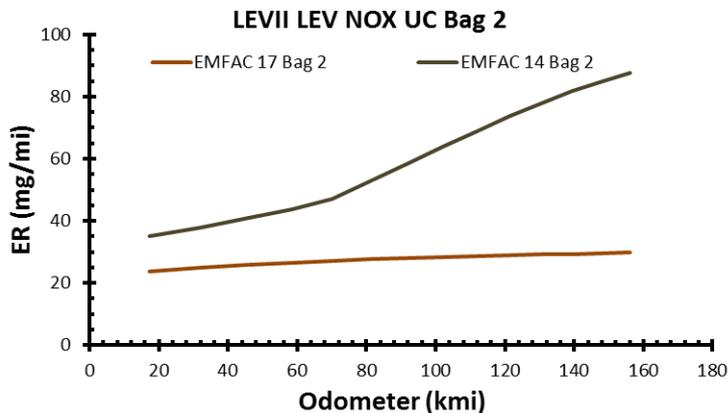
NOx UC_{P2} emissions depend on odometer for SULEVs only

NOx RE emission levels are <u>substantially below</u> previous assumptions

Starts Exhaust Emission Rates

EMFAC2017 LD Starts Exhaust ERs: Three Main Updates

1. EMFAC2017 start emission rates (StERs) updated using new UC BERs from IUVP and VSP data

2. CARB adopted new approach to computing StERs

$$\text{Cold StER} = \text{UC}_{\text{P1-100s}} \quad \textit{replaced by} \quad \text{Cold StER} = \text{UC}_{\text{P1}} - \text{UC}_{\text{P3}}$$

3. New warm starts data, from the VSP, used to update EMFAC's Soak Correction Factor Curve equations (SoFs)

$$\text{Warm StER} = \text{Cold StER} * \text{SoF}(t = \text{soak time})$$

HC: Starts Exhaust BERs

HC emissions in UC_{P1} much higher than anticipated

UC_{P1} HC dominates UC_{P3} HC

HC odometer dependence was not observed in LEVs and ULEVs

LEVII ULEV HC UC Bags 1 and 3

EMFAC 17 Bag 1
EMFAC 17 Bag 3
EMFAC 14 Bag 1

LEVII LEV HC UC Bags 1 and 3

EMFAC 17 Bag 1   EMFAC 17 Bag 3   EMFAC 14 Bag 1

LEVII SULEV HC UC Bags 1 and 3

EMFAC 17 Bag 1
EMFAC 17 Bag 3
EMFAC 14 Bag 1
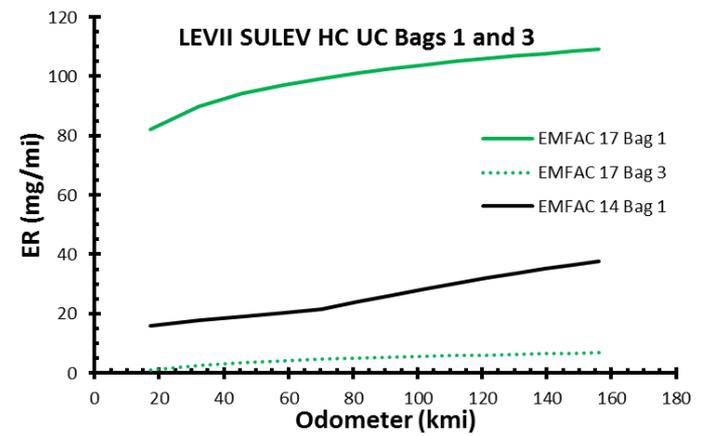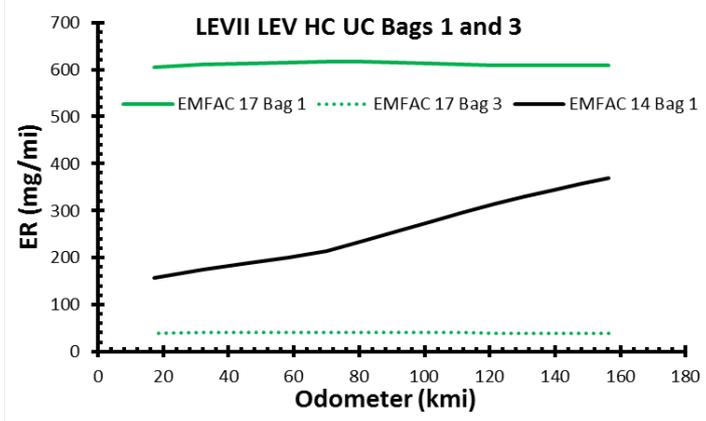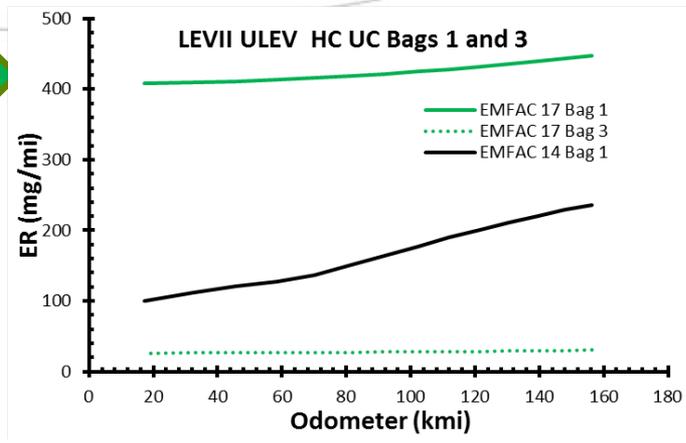
NOx: Starts Exhaust BERs

UC_{P1} NOx emissions >> than UC_{P3}

LEVII LEVs emit less NOx in UC_{P1} than assumed in EMFAC2014

LEVII ULEVs emit NOx at the same level as LEVII LEVs (same FTP standard)

LEVII ULEVs and SULEVs emit much more NOx during UC_{P1} than previously assumed.

LEVII ULEV NOX UC Bags 1 and 3

LEVII LEV NOX UC Bags 1 and 3

LEVII SULEV NOX UC Bags 1 and 3
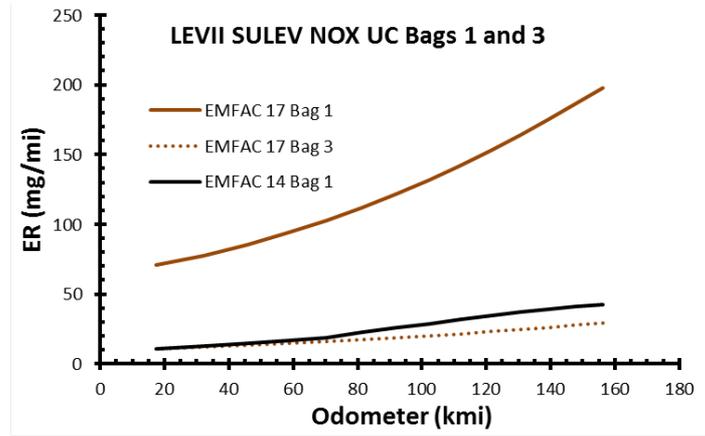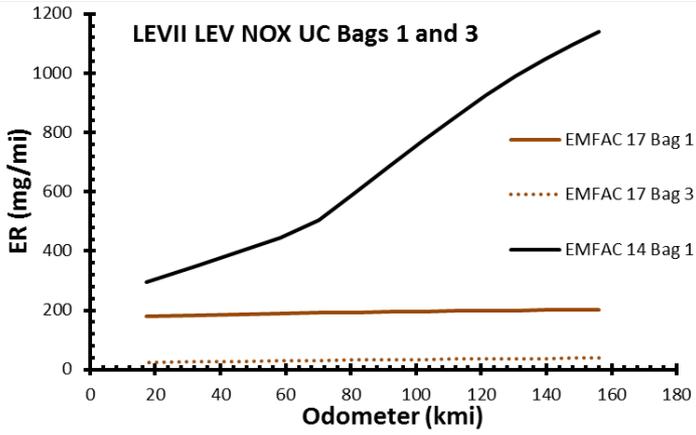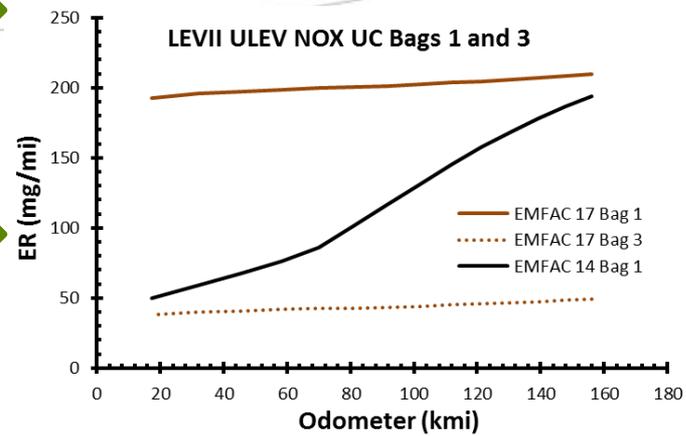
Starts Method Update

EMFAC2014: 100s Method

$$\text{StER} = \text{StCF} \times \text{UC}_{P1} \, \text{BER(odo)}$$

(mg/start) (mi/start)   (mg/mi)

where

$$\text{StCF} = \text{CE}_{P1\text{-}100} / \text{UC}_{P1\text{-}300}$$

(mi/start)   (mg/start)   (mg/mi)

(**HCs: 0.79 mi/start**, **NOx: 0.49 mi/start**)*

*for veh w/ 3-way catalysts and MPFI

Issues
1. Does not exclude running emissions
2. Does not include starts emissions past 100s
3. Cannot be used to model non-modal pollutants
4. Requires substantial post-processing
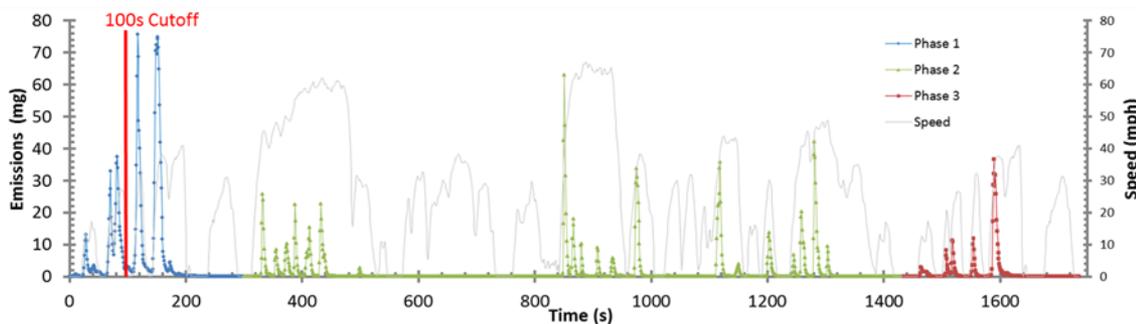
EMFAC2017: Phase-Integrated Method

$$\text{StER} = 1.2 \times [\text{UC}_{P1}\text{BER(odo)} - \text{UC}_{P3}\text{BER(odo)}]$$

(mg/start)   (mi/start)   (mg/mi)   (mg/mi)

*analogous to USEPA's FTP-Based Method

Cold StER EMFAC2017 vs. EMFAC2014: **HCs**

Starts HC ERs much larger than previously modeled
LEVII LEVs: 3.3 x
LEVII ULEVs: 3.6 x
LEVII SULEVs: 5.5 x
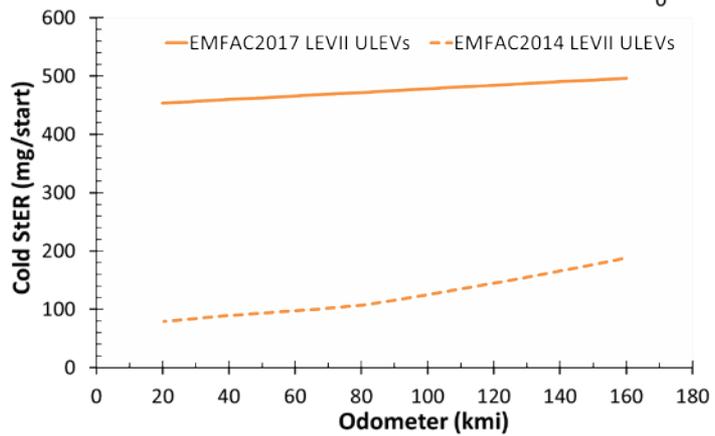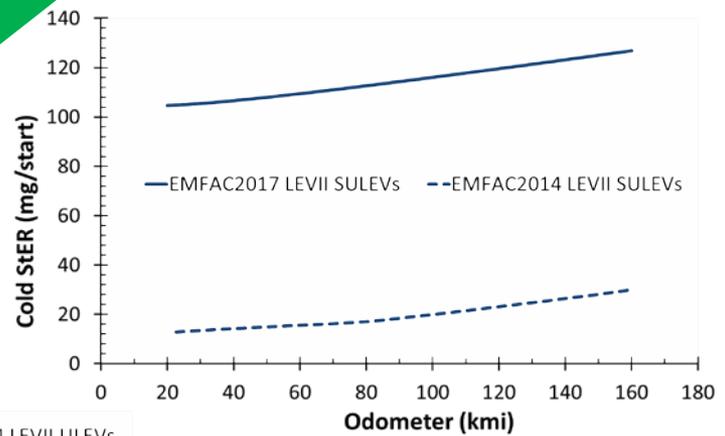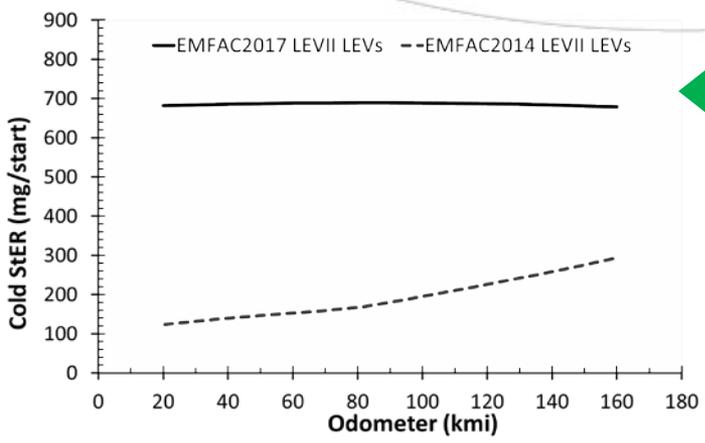
Cold StER EMFAC2017 vs. EMFAC2014: **NOx**
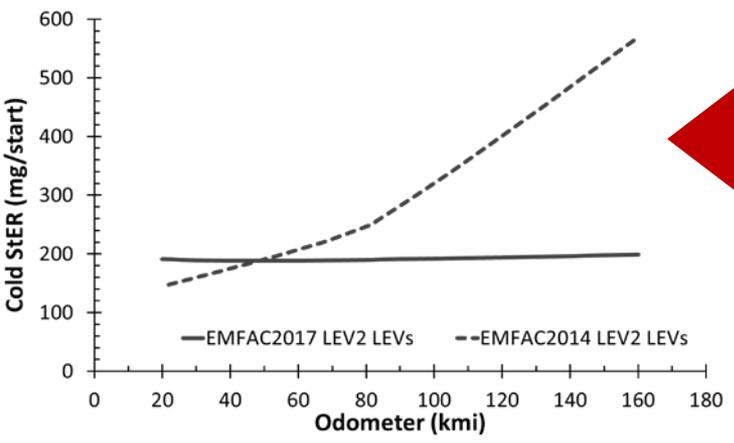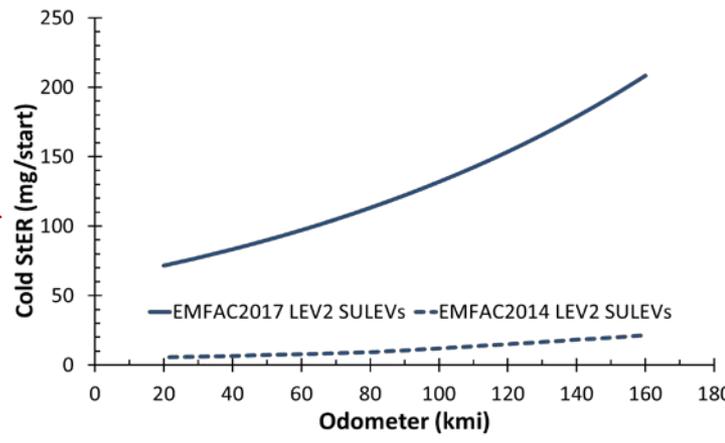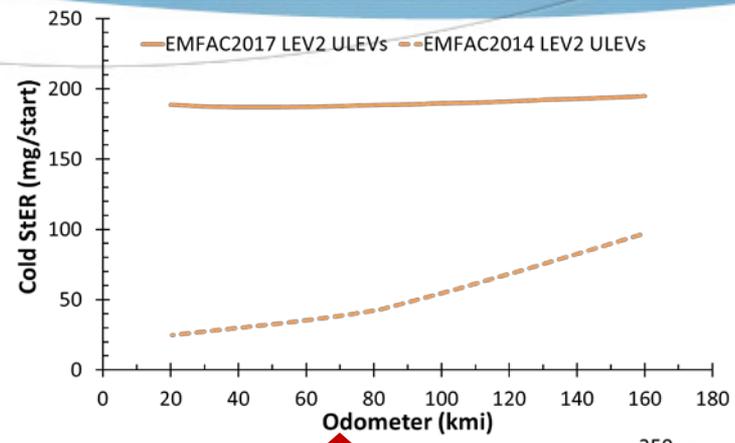
Starts NOx emissions higher for LEVII ULEVs and SULEVs and lower for LEVII LEVs
LEVII LEVs: 0.54 x
LEVII ULEVs: 3.1 x
LEVII SULEVs: 10.6 x

Warm Starts: HCs

EMFAC uses SoFs to compute warm start ERs

Warm StER(odo) = StER(odo)*SoF(t), t = soak time

VSP included UC Phase 1 testing following various soak periods

• These data were used to derive new SoFs

LEVII SULEVs HCs

Each Series Represents One Vehicle

LEVII SULEVs HCs

EMFAC2017

EMFAC2014

Newer vehicles (LEVII ULEVs and LEVII SULEVs) had higher emissions following <u>moderate</u> length soak periods
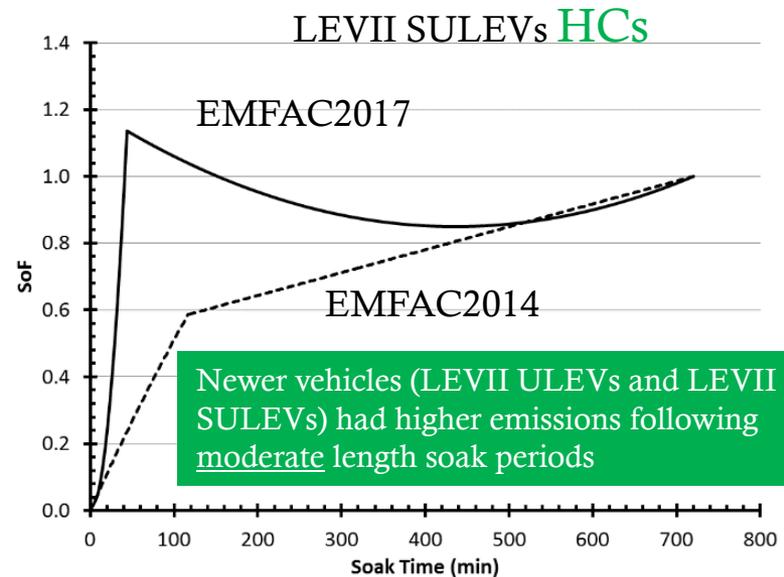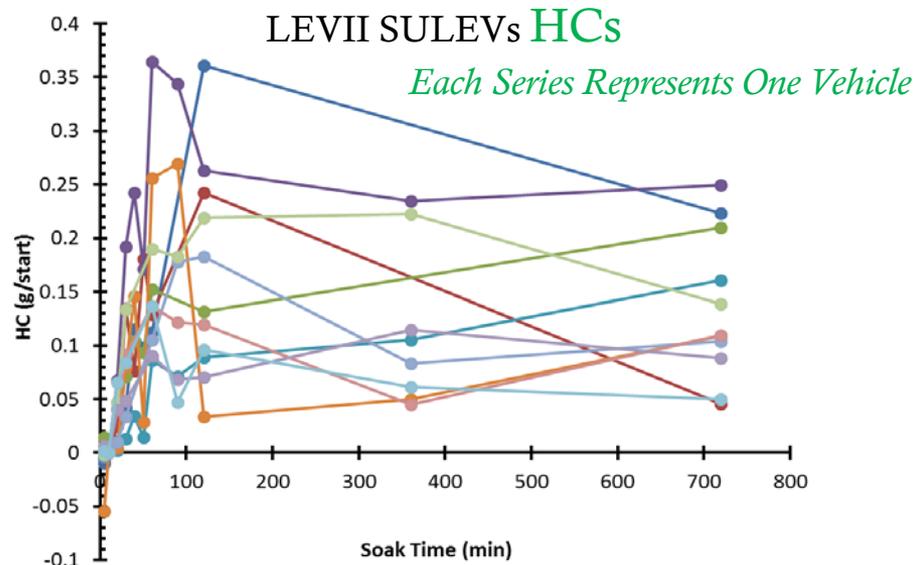
Warm Starts: NOx

Newer vehicles (LEVII ULEVs and LEVII SULEVs) had higher emissions following moderate length soak periods AND lower emissions following very short soak periods

LEVII ULEVs
NOx

Each Series Represents One Vehicle

LEVII ULEVs
NOx

EMFAC2017

EMFAC2014
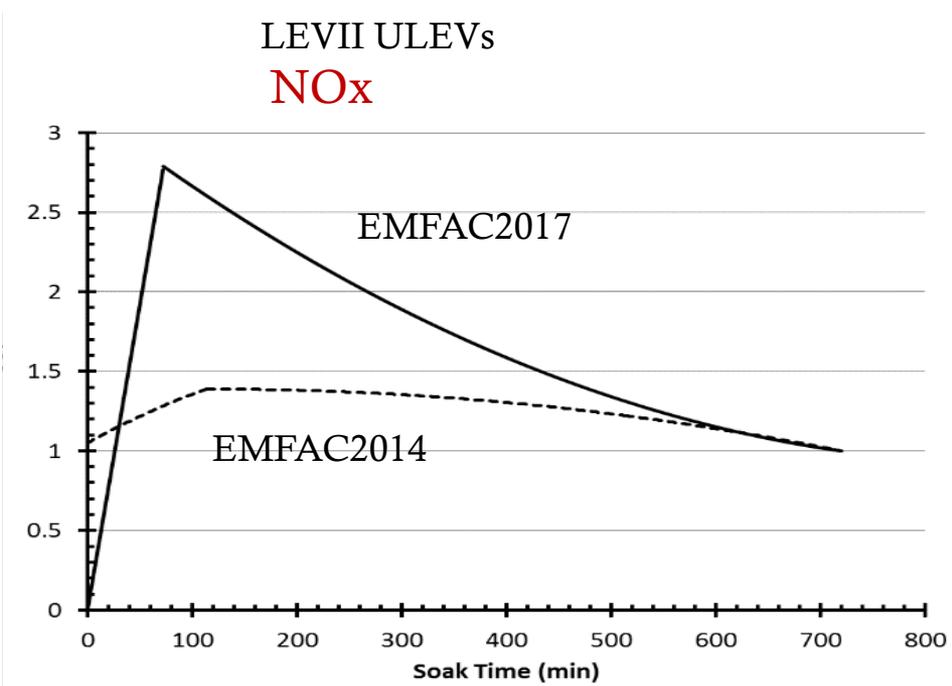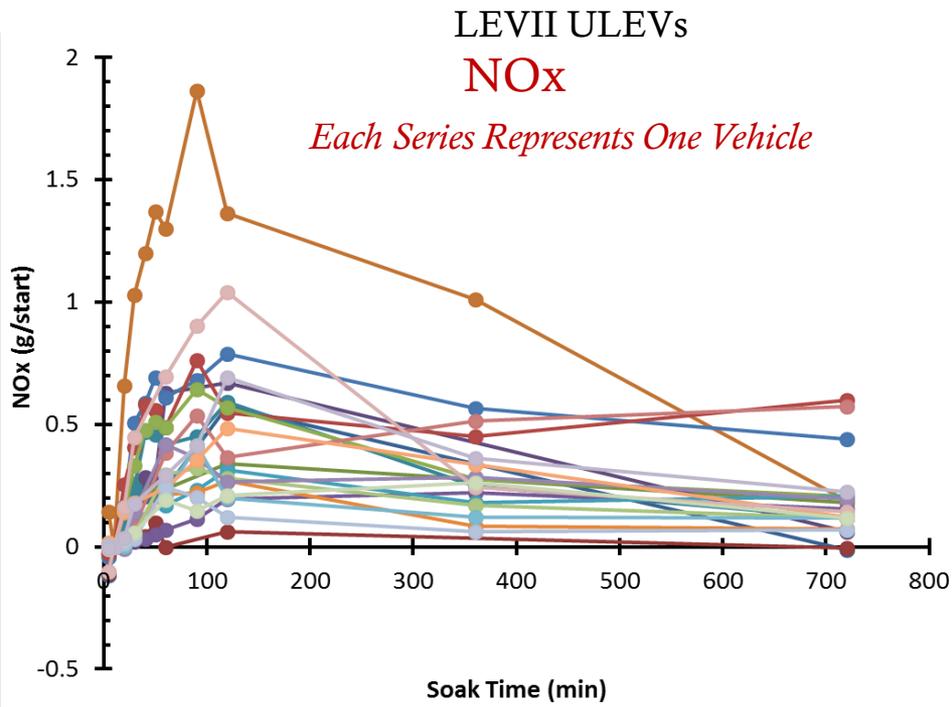
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EMFAC@arb.ca.gov

Emission Rates
Heavy Duty Vehicles

Outline

- Introduction to HD emission factors

- Updates to:
  - HD truck running exhaust emission rates and speed correction factors
  - Start emission rates
  - Idle emission rates
  - Transit bus emission rates

Introduction to HD Vehicle Emission Factors

- ## EMFAC2007/2011
  - Test data from CRC E55/59 project
  - Emission rate projections for 2007/2010 standard trucks

- ## EMFAC2014
  - Test data from 2007/2010 standard trucks
  - Focus on DPF and SCR equipped trucks

- ## EMFAC2017
  - Test data from late model vehicles with emphasis on 2013+ MY trucks with OBD

EMFAC2014 Modeled NOx Emissions

2010+ MY Heavy Duty Diesel Trucks
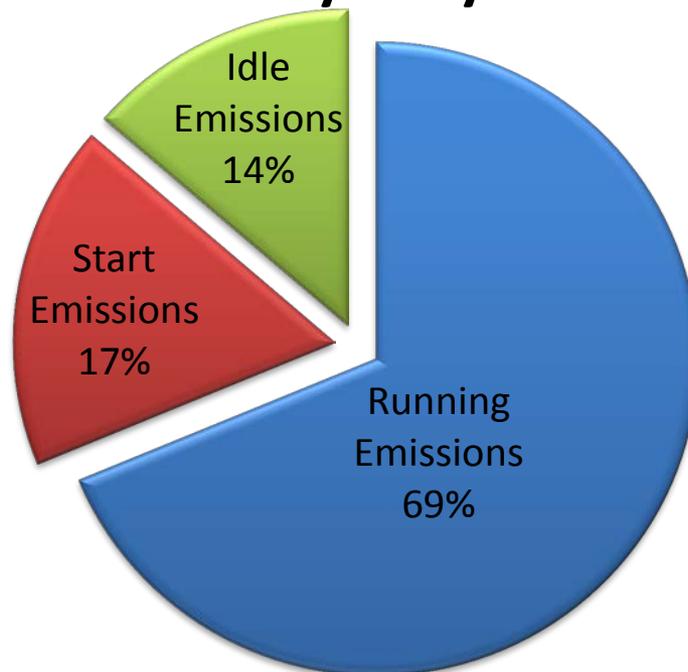
Calendar Year 2031

Running Exhaust Emission Rates

Dynamometer Test Cycles

Test Cycle/Mode	Average Speed (mph)	Duration (sec)	Length (mi)
UDDS	18.8	1060	5.54
Creep	1.8	253	0.12
Near Dock Drayage	6.6	3,046	5.59
Local Drayage	9.3	3,362	8.70
Transient	15.4	668	2.85
40-mph Cruise	39.9	2,083	23.1
50-mph Cruise	50.2	757	10.5
62-mph Cruise	62.0	1,385	23.2
OCBC	12.1	1,950	6.54

Test Data for Running Exhaust Emissions

- EMA/UCR HD diesel truck testing
  - Five 2012+ engine model year trucks
    - ARB confirmatory testing of three of five trucks
  - UDDS, Creep, Transient, 40-mph Cruise, 50-mph Cruise

- ARB Truck and Bus Surveillance Program
  - Seventeen HD diesel trucks (to date)
  - UDDS, Near Dock Drayage, Local Drayage, 40-mph Cruise, 62-mph Cruise

- Test vehicles selected randomly to cover major engine families of different manufacturers

Emissions Deterioration

- Emissions deterioration of HD engine is caused by
  - Tampering , mal-maintenance, and control component malfunction (TM&M)

- Deterioration is expressed as emissions impact rate (EIR) and determined by:
  - Frequency of TM&M
  - Emissions increase (%) of TM&M

Major TM&M Frequency and Emissions Increase (2013+ Engine MY)

After-treatment System TM&M	TM&M Freq (%)	Emissions Increase (%)			
		EMFAC2014		EMFAC2017	
		NOx	PM	NOx	PM
DPF Leaking	26.3	0	600	0	5200
DPF Disabled	2	0	1,000	0	10,000
SCR Malfunction	33.3	300	15	300	15
NOx Sensor #1	30	200	0	200	0
NOx Sensor #2	1.5	200	0	200	0

*Frequency and emission increase at 1,000,000 miles

Running Exhaust Emission Rate

- Average emission rate (ER_{avg}) is average of dynamometer test results over UDDS cycle

- ER_{avg} is then back-projected to "zero-mile rates (ZMR)" using emission impact rate (EIR)

- Deterioration rate (DR) is rate of emissions increase

  - **Zero Mile Rate:** $\qquad$ $ZMR \text{ (g/mi)} = \dfrac{ER_{avg}}{\left(1 + EIR \times \dfrac{Odo_{avg}}{1{,}000{,}000}\right)}$

  - **Deterioration Rate:** $\qquad$ $DR \text{ (g/mi/10k mi)} = \dfrac{ZMR \times EIR}{100}$

UDDS NOx Emission Rate for 2013+ MY HHD Trucks
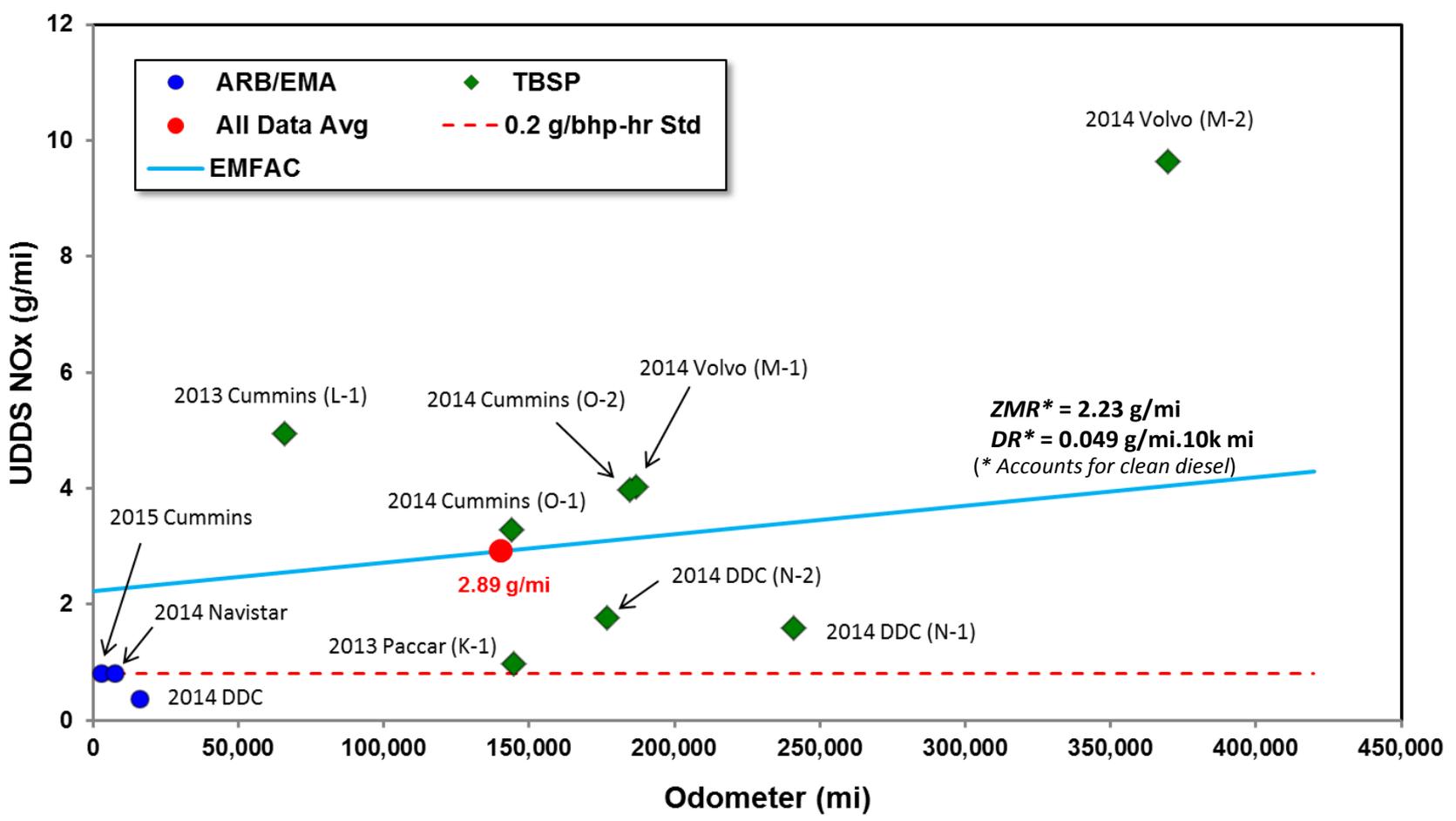
Comparison of Zero-Mile Rates

Engine Model Year	EMFAC2014			EMFAC2017		
	NOx* (g/mi)	PM* (mg/mi)	CO2 (g/mi)	NOx* (g/mi)	PM* (mg/mi)	CO2 (g/mi)
2010-12	2.33	4.4	2,056	2.45	0.9	2,220
2013+	1.89	4.4	2,056	2.40	0.9	2,088

* NOx and PM rates have been normalized to pre-Clean Diesel fuel for EMFAC model

NOx Emissions Deterioration
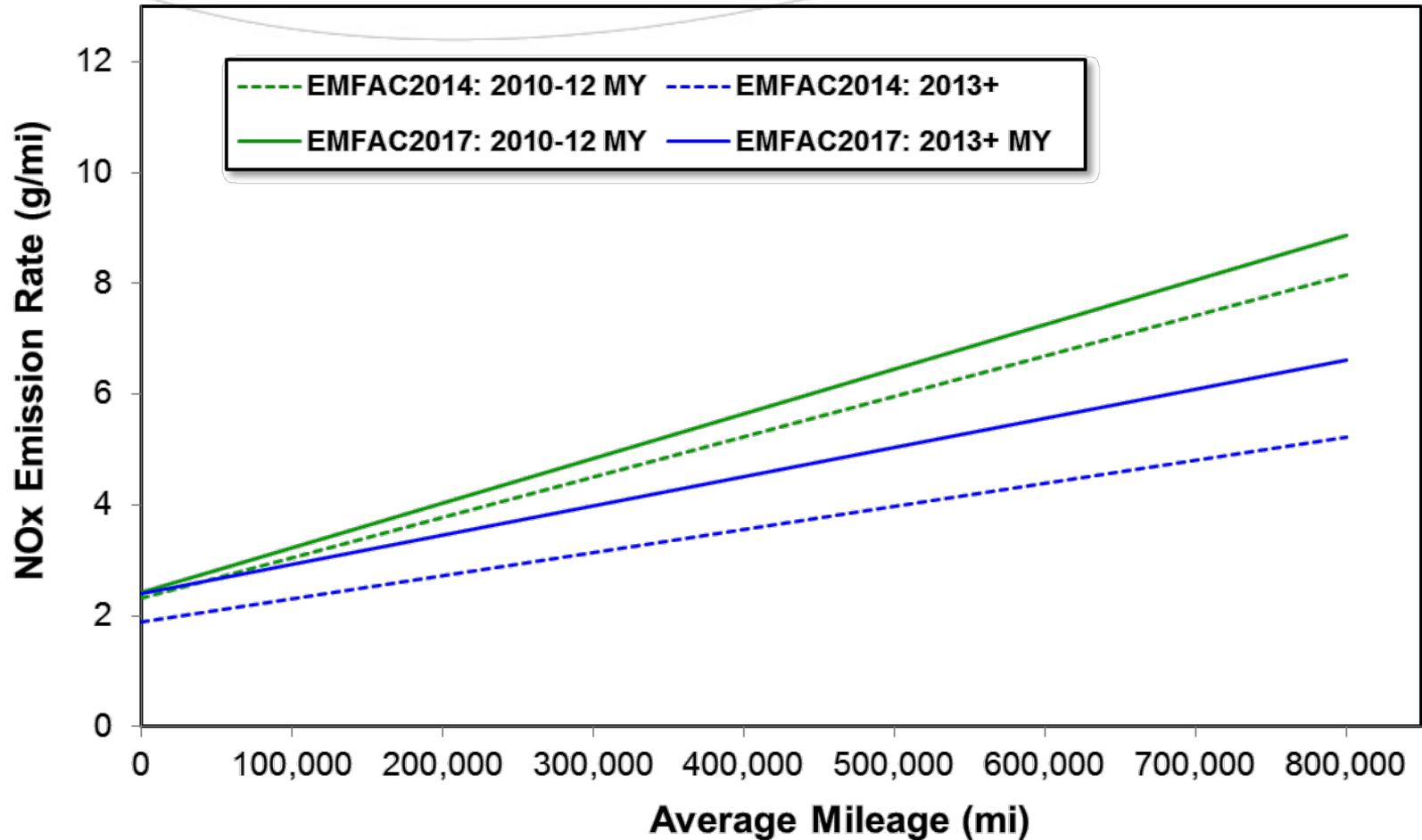
PM Emissions Deterioration
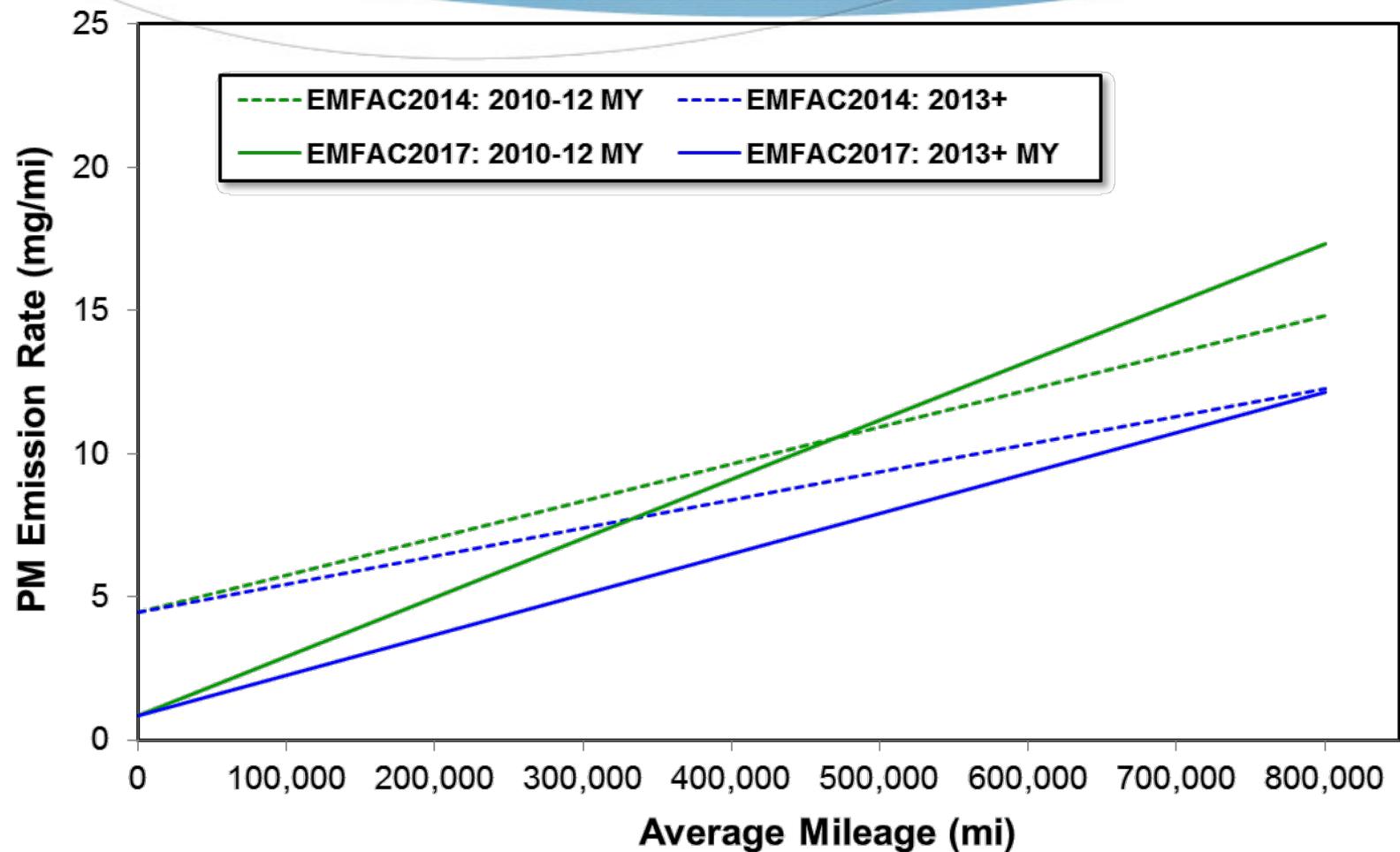
Speed Correction Factors

- Running exhaust emission rates vary by speed

$$ER_{MY} = (ZMR_{MY} + DR_{MY} \times Odometer_{Age}) \times SCF_{MY}$$

- Dynamometer test data provide emission rates at different test cycle speeds

- Speed correction factors developed based on emission rates of six test cycles

NOx Speed Correction Factor
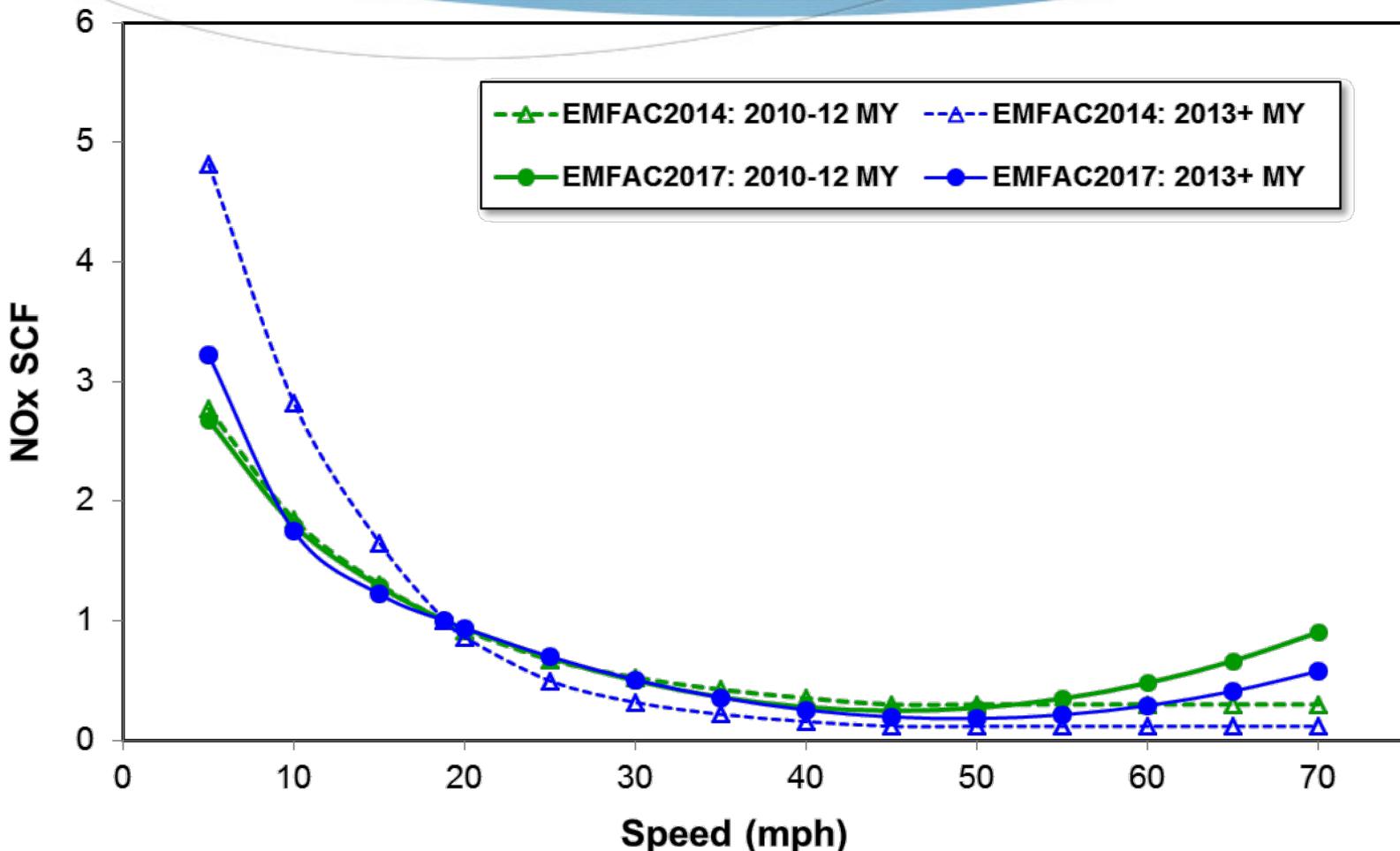
PM Speed Correction Factor
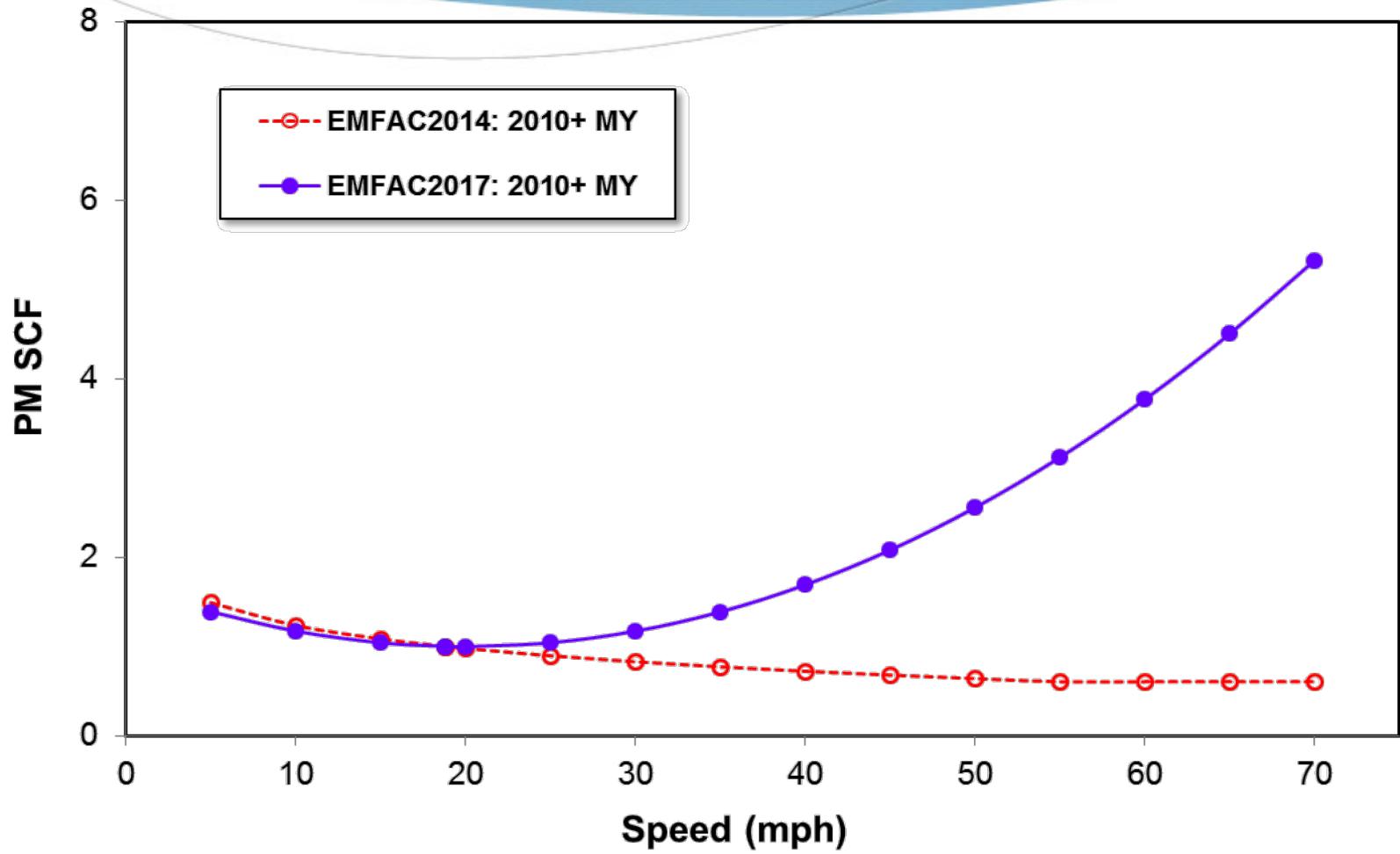
CO2 Speed Correction Factor
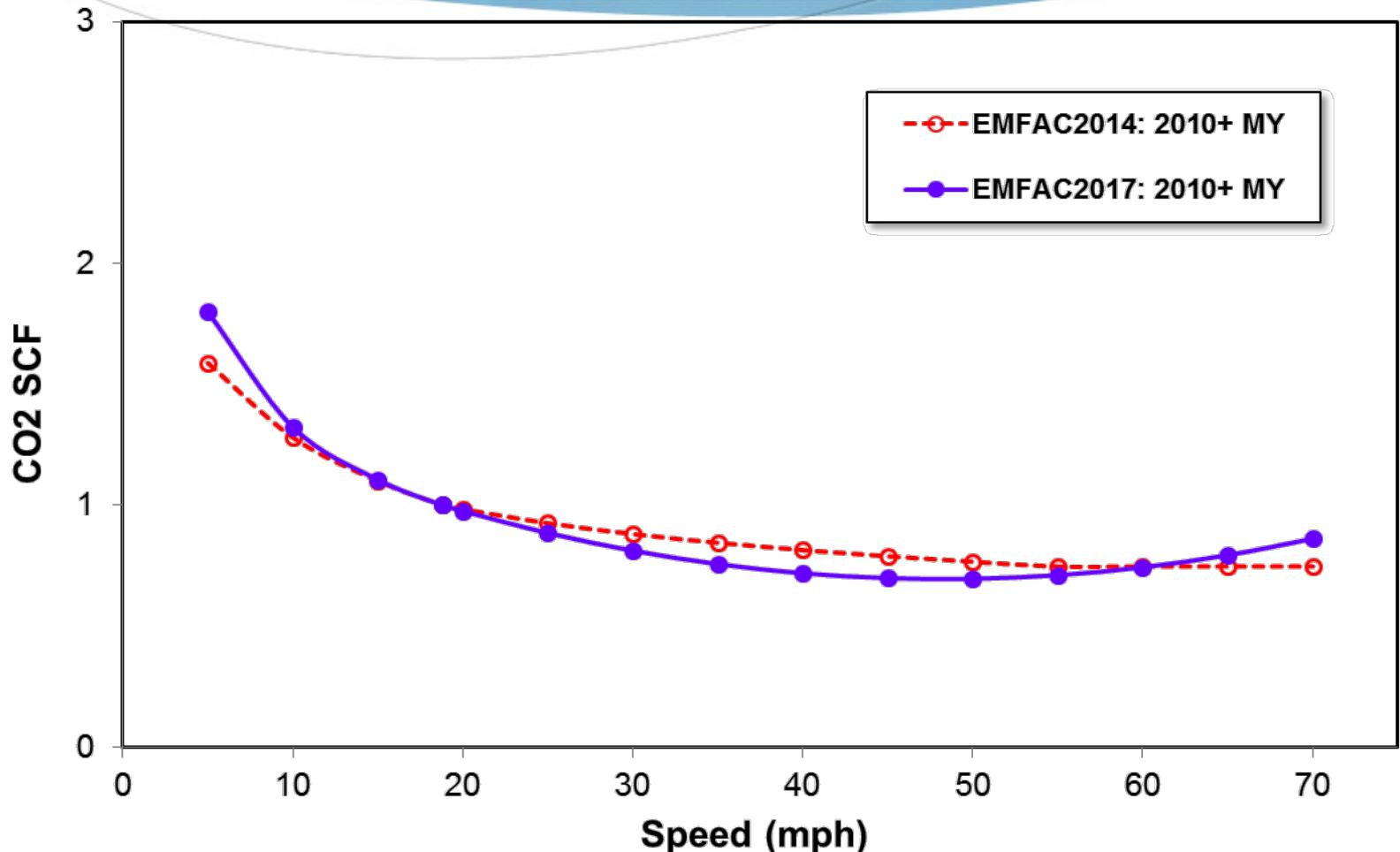
Start and Idle Emission Rates

SCR Truck Start Emissions

- Start emissions generated after engine start when SCR is not at working temperatures

- Start emissions are a function of
    - Start emission rate (g/start)
    - Number of starts per day

- Emission factors are based on test data from ARB over-the-road PEMS testing

PEMS Testing of Start Emissions
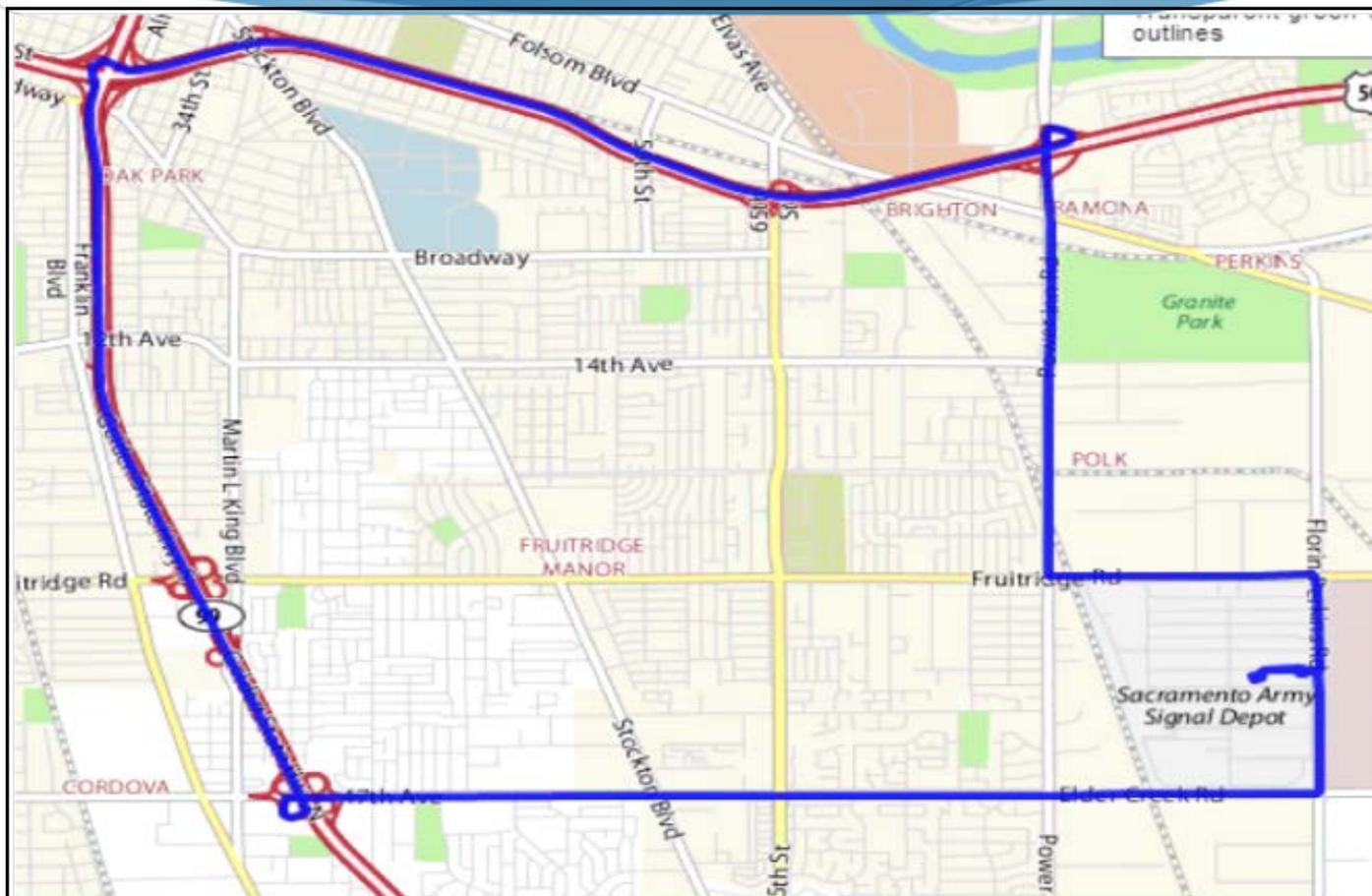
Number of trucks tested: 4   **Distance: 16 miles**   **Duration: 50 minutes**

NOx Emissions of Trucks with SCR System

Start Emissions for Multiple Soak Times (Manufacturer B MY2011)
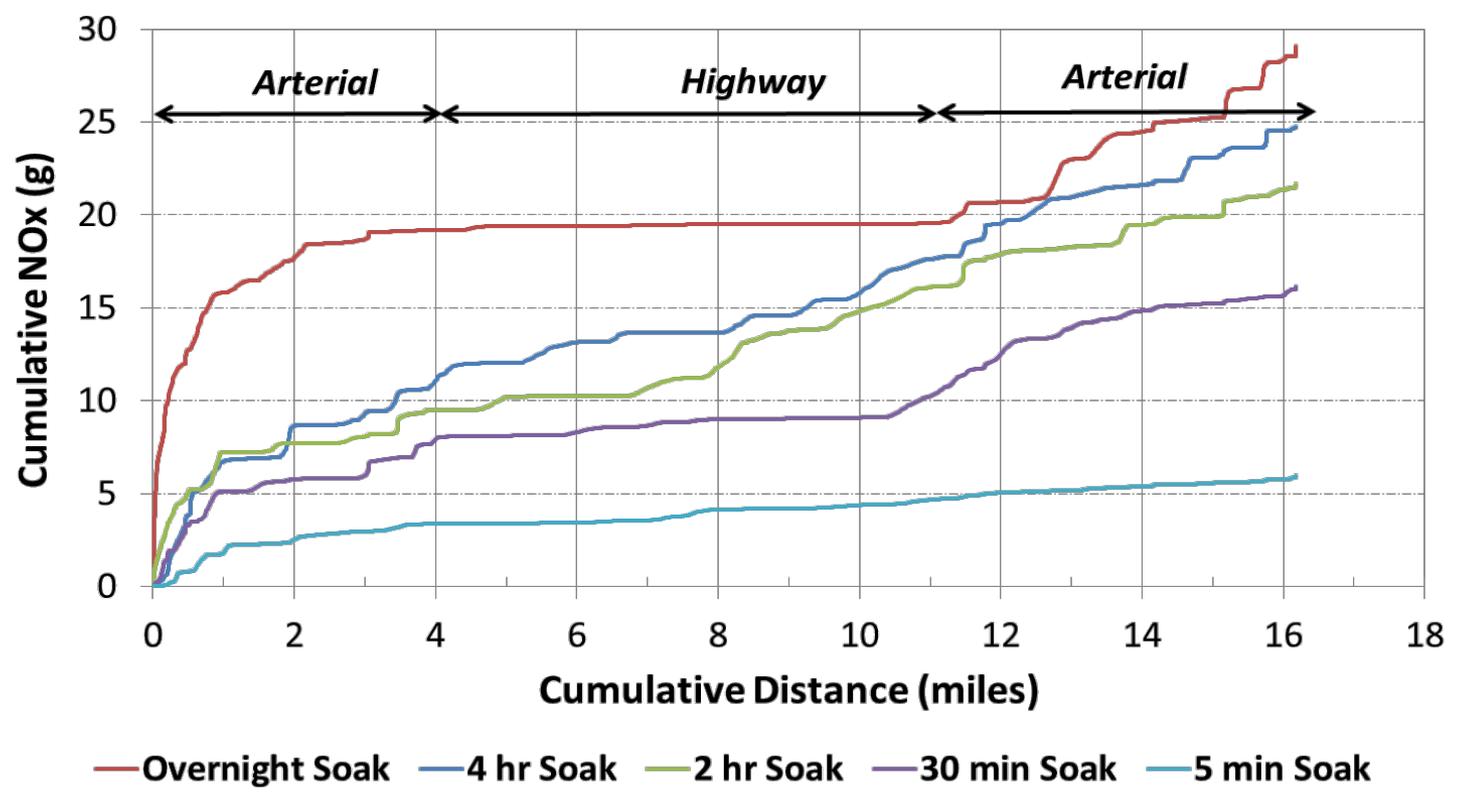
NOx Start Emissions vs Soak Time

Start NOx emissions based on test data
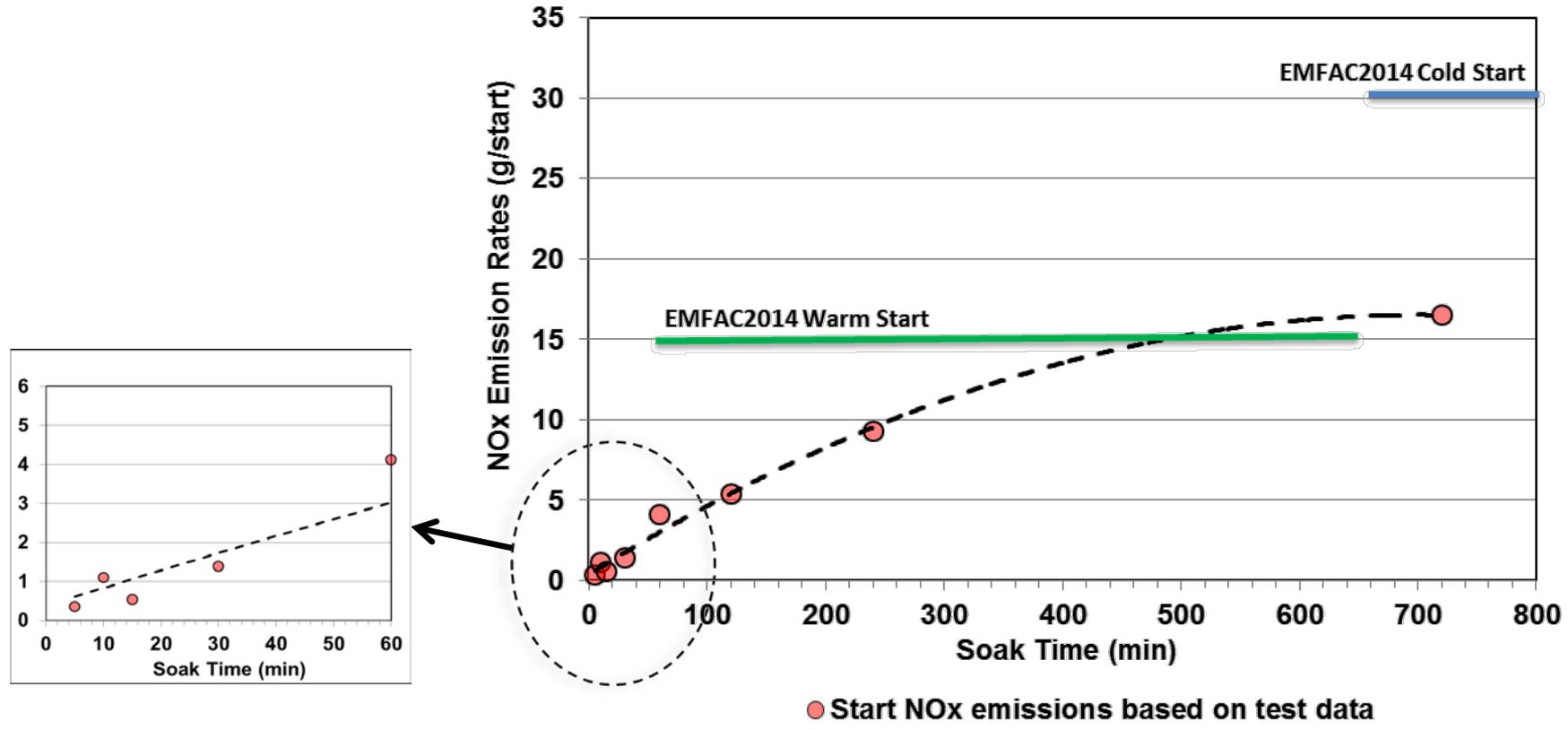
Idle Emission Testing

- Idle emission rates are based on PEMS test results from ARB and TTI

- ARB tested 4 HD trucks of 2013+ MY
  - A test run consisting four 15-min segments:
    idle $\rightarrow$ idle+AC $\rightarrow$ idle $\rightarrow$ idle+heater

- Test data of 8 CA clean idle certified trucks tested by TTI were used
  - Each truck idle tested at 100°F and 30°F to simulate summer and winter conditions

Revised Idle Emission Rate for 2010+ MY

Idle Mode	EMFAC2014			EMFAC2017		
	NOx (g/hr)	PM (mg/hr)	CO2 (g/hr)	NOx (g/hr)	PM (mg/hr)	CO2 (g/hr)
Low Idle	12.1	1.0	4,574	23.2	4.1	5,646
High Idle (summer)	25.4	2.5	10,520	31.0	16.7	6,938
High Idle (winter)	21.8	4.3	8,233	39.7	23.6	7,510

Transit Bus Emission Rates

Transit Bus Emissions Testing

- WVU Integrated Bus Information System (IBIS)
  - 29 diesel buses of 1986-2003 MY
  - 10 CNG buses of 2005-2008 MY

- ARB testing for Valley Transit Agency
  - 3 diesel buses of 2011 MY (SCR)
  - 3 CNG buses of 2011-2012 MY (TWC)

- Altoona Bus Research and Testing Center funded by Federal Transportation Agency
  - 8 diesel buses of 2010-2015 MY (SCR)
  - 10 CNG buses of 2010-2015 MY (TWC)

Diesel Transit Bus Emission Rate

Model Year	EMFAC2014			EMFAC2017		
	NOx (g/mi)	PM (mg/mi)	CO2 (g/mi)	NOx (g/mi)	PM (mg/mi)	CO2 (g/mi)
2003	14.0	116	2,417	12.6	12.6	2,358
2004-2006	3.83	116	2,417			
2007-2009	2.04	13.9	2,417	8.13	12.6	2,432
2010+				1.70	6.0	2,029

CNG Transit Bus Emission Rate

Model Year	EMFAC2014			EMFAC2017		
	NOx (g/mi)	PM (mg/mi)	CO2 (g/mi)	NOx (g/mi)	PM (mg/mi)	CO2 (g/mi)
Pre-2003	21.6	42.5	2,394	20.3	21.7	2,325
2003-2006	15.4	23.0	2,394	17.1	15.1	2,048
2007	0.65	1.3	2,305			
2008+				0.61	5.0	2,237

Adjustment to Emission Factors by Vehicle Model Year

- All emission factors were calculated on an engine model year basis weighted by sales data from different FELs

- Each vehicle model year includes several engine model years

- Truck activity data are collected by vehicle model years

DTR Data: HD Truck Engine and Vehicle Model Years

Vehicle Model Year	Engine Model Year				
	2009	2010	2011	2012	2013
2010	83%	17%			
2011	17%	67%	15%		
2012		15%	68%	17%	
2013		8%	16%	66%	10%

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Emission Deterioration

Heavy Duty Vehicles

Outline

- Background

- Deterioration in emissions modeling

- Proposed updates

- Future steps

Background

- Discussion with stakeholders on representativeness on EMFAC assumptions being outdated

- CARB recognizes need to update assumptions but asserts the model itself is sound

- CARB staff mining new data to update emission impact rates (EIR)

- EIR is an input to EMFAC deterioration model to calculate emission rates

Emission Deterioration in EMFAC

Emission Impact Rate (EIR)	$=$	**Frequency** of Engine Component or After-treatment system Failure	$\times$	**% Emission Increase** from Engine Component or After-treatment system Failure
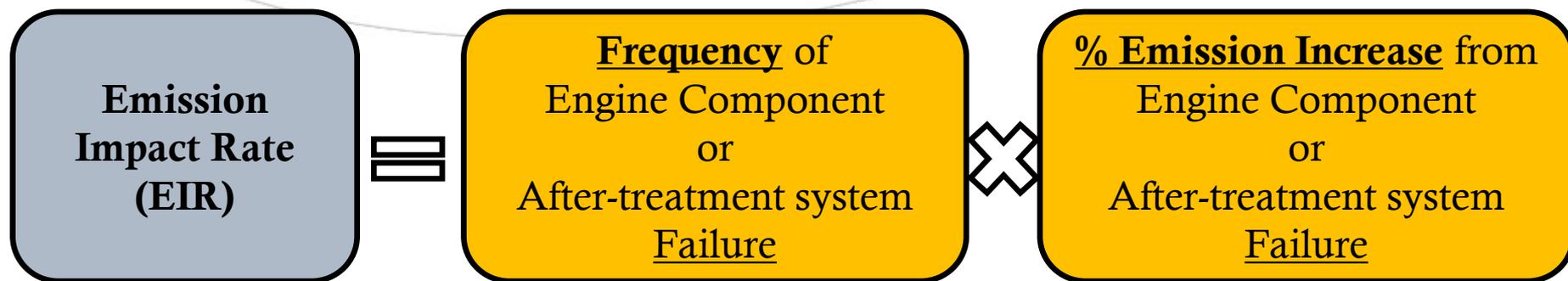
Two Major Assumptions:

1. Emissions from diesel powered trucks remain stable in the absence of tampering, malfunctions and mal-maintenance.

2. The deterioration factors are based upon the assumption of the frequency (FREQ) of occurrence and consequence of eighteen specific instances of tampering and mal-maintenance (TMM)

EIR and Emissions Modeling

$$\text{ZMR (g/mi)} = \frac{ER_{avg}}{\left(1 + EIR \times \frac{Odo_{avg}}{1{,}000{,}000}\right)} \qquad \text{DR (g/mi/10k mi)} = \frac{ZMR \times EIR}{100}$$

$$\text{ER (g/mi)} = (\text{ZMR} + \text{DR} \times \text{Odometer}) \times \text{SCF}$$

- ❑ Zero-mile emission rate (ZMR) – Fleet average UDDS emission rates while trucks are new
- ❑ In-Use Emission Deterioration (DR) – Increase of emissions over time within the in-use fleet caused by tampering, malfunction and mal-maintenance (TM&M) of engine components, and emission control systems
- ❑ Speed Correction Factors (SCF) – A method to correct emission factors at different driving speeds

Need for Update

- Data shows PM and NOx emissions from new technology engines increase overtime for same MY over a course of few years

- Maintaining and quantifying in-use emission performance is a critical piece of mobile source strategy

- EMFAC's deterioration model and embedded assumptions critical to assess emission benefits of regulatory activity

Action Items for EIR Update

1. In-House Data Mining to update TMM Emission increase from OBD Demonstration Reports

   ➢ PM ↑; NOx-no change

2. Developing strategies to collect <u>voluntary</u> road-side OBD scans from MY2013+ engines and update TMM FREQ

   ➢ Field trials successful ; focus on routine data collection strategies

3. Formulated Emissions Inventory Workgroup to share data

   ➢ Provided EMFAC data needs. Awaiting feedback.

Action #1 – TMM Emission Increase

- Manufacturer submitted emissions test data from one or more durability demonstration test engines (DDV reports)

- Baseline FTP/RMC-followed by introduction of one malfunction at a time and reevaluating emissions

- Data therefore provides emissions increase and systems ability to detect malfunction below OBD threshold (MIL light)

- Components tested include: SCR catalyst, DEF doser, NOx sensors, DOC, EGR, fuel system, boost control and PM filter leak

Emission Increase (%) Proposal

Priority	TM&M Action	FREQ‡	Emission Increase (%)			
			EMFAC2014		EMFAC2017	
			PM	NOx	PM	NOx
1	PM Filter leak	26.3%	600	0	5,200	0
2	PM Filter Disabled	2%	1000	0	10,000	0
3	NOx After-treatment Malfunction	33.3%	15	300	15	300
4	NOx After-treatment Sensor #1	30%	0	200	0	200
5	NOx After-treatment Sensor #2	1.5%	0	200	0	200

‡ FREQ to be updated

❑ PM filter leak and disabled increases by an order of magnitude
  ❑ Reflects baseline of 0.001 g/bhp-hr (cert) vs of 0.01 g/bhp-hr (std)
  ❑ Broken DPF emits at 0.05 g/bhp-hr and therefore 50x increase
❑ No changes to NOx ATS malfunction (DEF injector and SCR)
❑ No changes to NOx sensor malfunction

Changes to Deterioration Rates
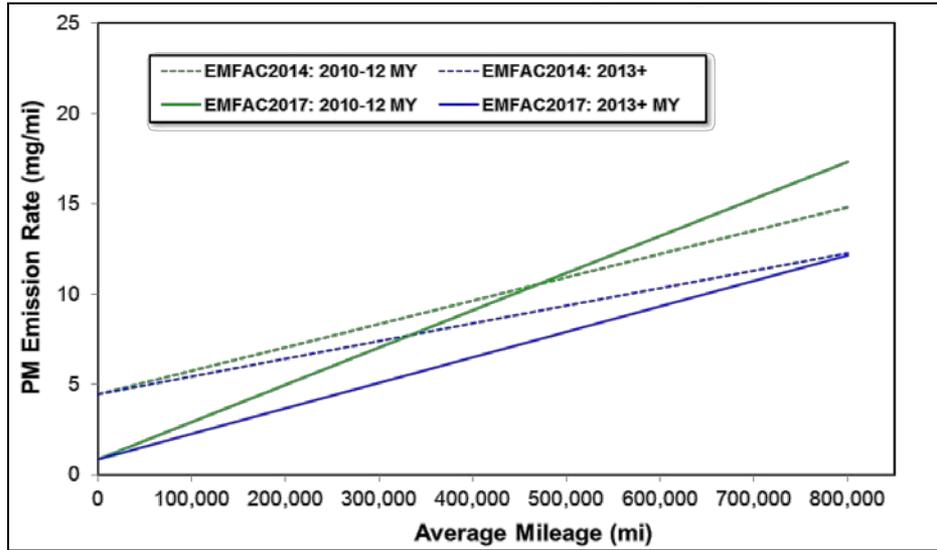
Proposed PM emissions start from a lower zero mile rate but deteriorate faster
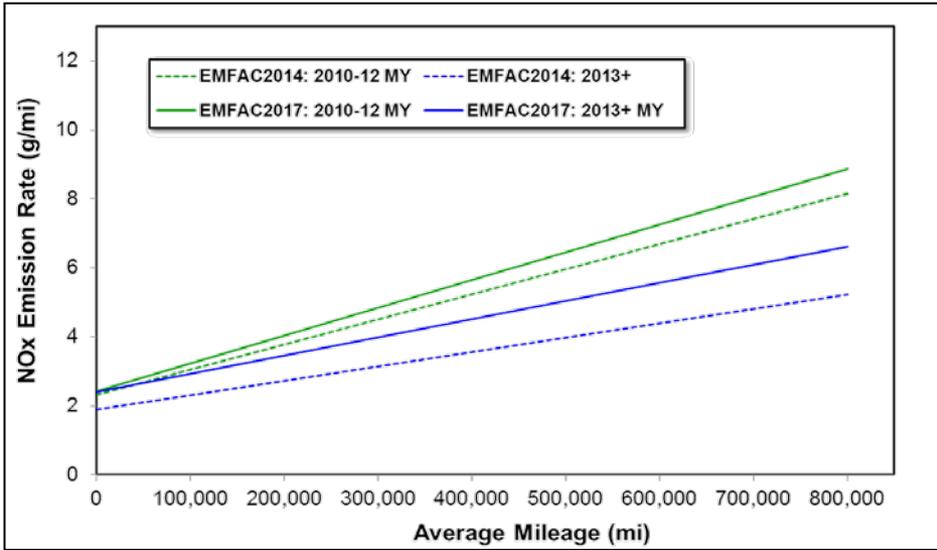
No discernible changes to NOx deterioration for MY2013+

Action #2: TMM FREQ

1. **Repair Data**: Analyzed repair data provided by a truck repair shop in Southern California

   ❖ Malfunctions that don't affect drivability may not get repaired

2. **OBD Scan Data:** Staff developing strategies to collect diagnostic scan data from MY2013+ engines

   ❖ Preliminary field trials in April 2017 successful

   ❖ Routine data collection strategy being put together

Plan for OBD Data Collection

Field Trials (Apr 2017): Number of Data Capture

	POLA		Cottonwood	
Manufacturer	Scan Successful	Scan Failed	Scan Successful	Scan Failed
Cummins	2	1	14	5
Mack	2	0	-	-
DD	2	0	5	2
Navistar	3	0	0	1
Paccar	-	-	3	1
Volvo	-	-	9	0

- Run selected sections
- Run single test case

☐ OBD ECUs Verification (DM5)
☐ Vehicle and engine information (VIN, DM56, 19)
☐ Diagnostic Trouble Codes (DM1, 2, 6, 12, 23, 27, 28, 29, 31)
☑ Diagnostic Readiness (DM5, 21, 26)
☐ Monitor Performance Ratio (DM20)
☐ Verify Engine Operation
☐ SPN Support (DM24)
☐ Freeze Frame (DM25)
☐ Monitored Test/Scaled Test Results (DM7/30)
☐ Data Stream Support Verification
☐ Clear/Reset DTCs

❏ Field trials show its viable to collect OBD scan data for various manufacturers
❏ CARB acquiring at least 8 new Silver Scan tools
❏ Remove any deficiencies such as inability to scan newer engines
❏ Initiate stand-alone studies at other CHP inspection facilities

Revise TM&M FREQ Categories to Reflect HD OBD

- EMFAC deterioration methodology is sound and updating TM&M FREQ with OBD scan data will ensure it's representative of current fleet characteristics

- OBD can also capture engine de-rate due to tampering (e.g., empty DEF tank)

EMFAC2014

TM&M Action
Timing Advanced
Timing Retarded
Injection Problems
NOx Aftertreatment Sensor #1
NOx Aftertreatment Sensor #2
PM Filter leak
PM Filter Disabled
Fuel Pressure High
Clogged Air Filter
Wrong/Worn Turbo
Intercooler Clogged
Other Air Problems
Engine Failure
Excess Oil Consumption
Electronics Failure
Electronics Tampered
Oxy Cat Malfunction
NOx Aftertreatment Malfunction
EGR Disabled/Low Flow

Future EMFAC

Priority [a]	TM&M Action	Description [b]	Category
1	PM Filter Performance	Broken DPF	Exhaust Aftertreatment System
2	PM Filter Disabled	Missing or bypassed DPF	
3	SCR Catalyst Efficiency	SCR catalyst with degraded efficiency	
4	Reductant Delivery Performance	Reduction in DEF dosing quantity	
5	DOC Catalyst/PM Filter Catalyst Conversion Efficiency	Degraded efficiency DOC/PM filter catalyst	
6	Boost Pressure Control	Over-boost, under-boost, changes to response time, or charge air cooling malfunction	Engine Components
6	EGR System	Changes to flow, response time or cooler performance	
6	Fuel System	Changes to injection pressure, timing or quantity	
7	NOx Sensors	Malfunction in NOx sensor performance	Sensors

[a] priorities based upon analysis of OBD demonstration reports
[b] TM&M actions that generate OBD codes in MY2013+ engines

Action #3: Stakeholders Involvement

❑ Includes stakeholders such as: EMA, CTA, ATA, Navistar, Detroit Diesel, Volvo, etc.

❑ White paper on EMFAC data needs provided to stakeholders (Feb 2017)

❑ CARB encourages stakeholders to provide available data:

   ❑ Longitudinal diagnostic, and repair data (beyond warranty timeframe) from OEM's dealerships to update TM&M FREQ

   ❑ OBD demonstration reports lacks data on the empty can

Future Steps

❑ Updates to % emission increase – Staff has high confidence in manufacturer submitted data

❑ Updates to TMM FREQ – Strategies to collect OBD scan data for MY2013+ engines using CARB's enforcement infrastructure across CA being implemented

❑ Stakeholders Involvement – Additional data via Emissions Inventory Workgroup that can fulfill gaps or strengthen in-house data mining efforts

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Vehicle Activity Profiles

Light Duty Vehicles

Outline

- Background

- Data Source

- EMFAC Updates
  - Number of Starts per Day:
    original: 6.35 ⟶ new: 4.75
  - Start Distribution by hour
  - Soak time distribution
  - Engine-on time distribution
  - Accrual Rate

LDV Start Emissions
LDV Hot Soak Evaporative Emissions

LDV Running Loss Evaporative Emissions
VMT distribution by Age

Background

- LDV daily activity profile includes:
  - o Number of starts per day: 6.35 on average in EMFAC2014
  - o Start temporal distribution
  - o Soak time distribution
  - o Time-on distribution

- Data source for EMFAC2014 and prior versions: EPA 3-city instrumented vehicle data: Baltimore, Spokane and Atlanta (1992)

California Household Travel Survey (CHTS)

- Conducted by Caltrans

- Every 10 years

- Detailed information on the socioeconomic characteristics and travel behavior of households in all 58 counties

- Support regional and statewide travel and environmental models

2010 CHTS OBD/GPS Data

California Household Travel Survey 2010

- Time Frame: Jan 2012 –Jan 31, 2013

Survey Component	Duration	Full Study Size (HH)
Main Survey Diary	24-hour	42,431
Wearable GPS	3 days	3,855
Vehicle GPS	7 days	422
GPS and OBD	7 days	1,440

CHTS OBD/GPS Data

- GPS
  - Consecutively logged points -1 second frequency
  - Date, time, latitude, longitude, speed
  - Trip ends and modes matched using Trip Identification and Analysis System (TIAS)

- OBD
  - at 1 second frequency : Speed
  - at 6 second frequency :
    - o   Air flow rate
    - o   throttle position
    - o   engine load
    - o   engine speed

Example: TIAS-processed data on a walk-vehicle-walk trip
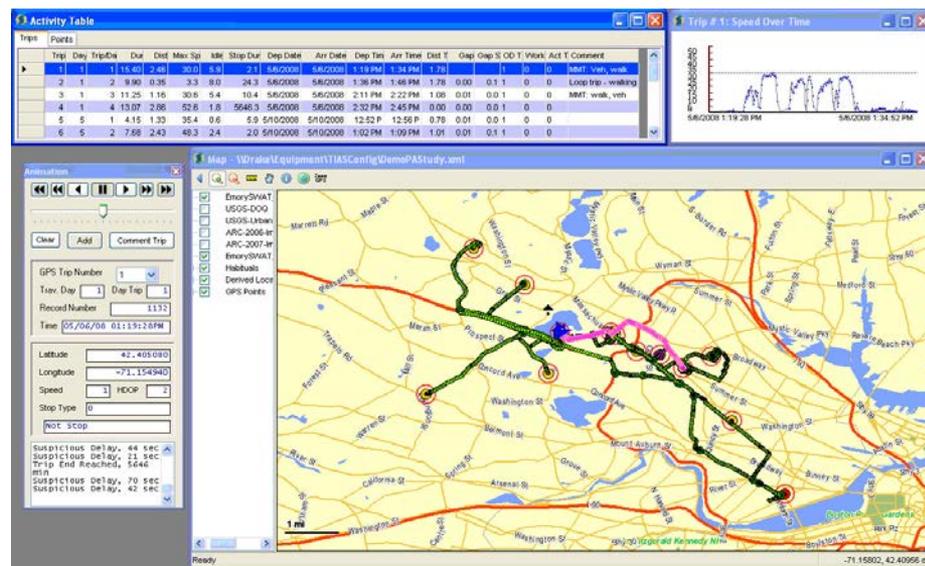
Number of Starts

- Number of starts is less than previously assumed
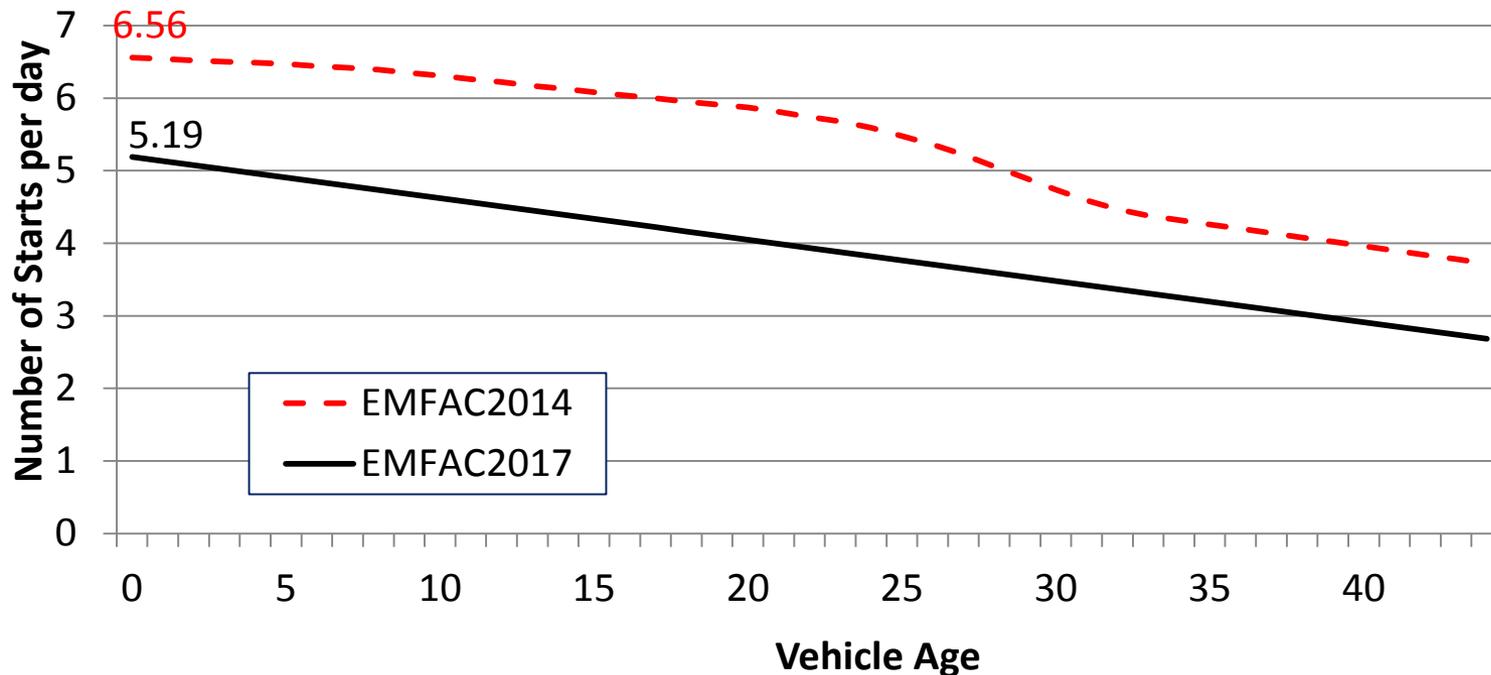
Number of Starts

- Statistical analysis suggests number of starts per day is correlated with vehicle body type, but not necessarily fuel type (e.g., gas or diesel) or region type (urban vs. rural)

- Reduced number of starts is also corroborated by other data sources such as:
  - Telematics data from several PHEV manufacturers
  - NHTS historical data from 1969 to 2009 on daily vehicle trips
  - CHTS main survey data on household trips

LDV Number of Starts by Hour Distribution

- CHTS data suggests Californian most often make vehicle trips different from those in Atlanta, Baltimore, or Spokane in 1992
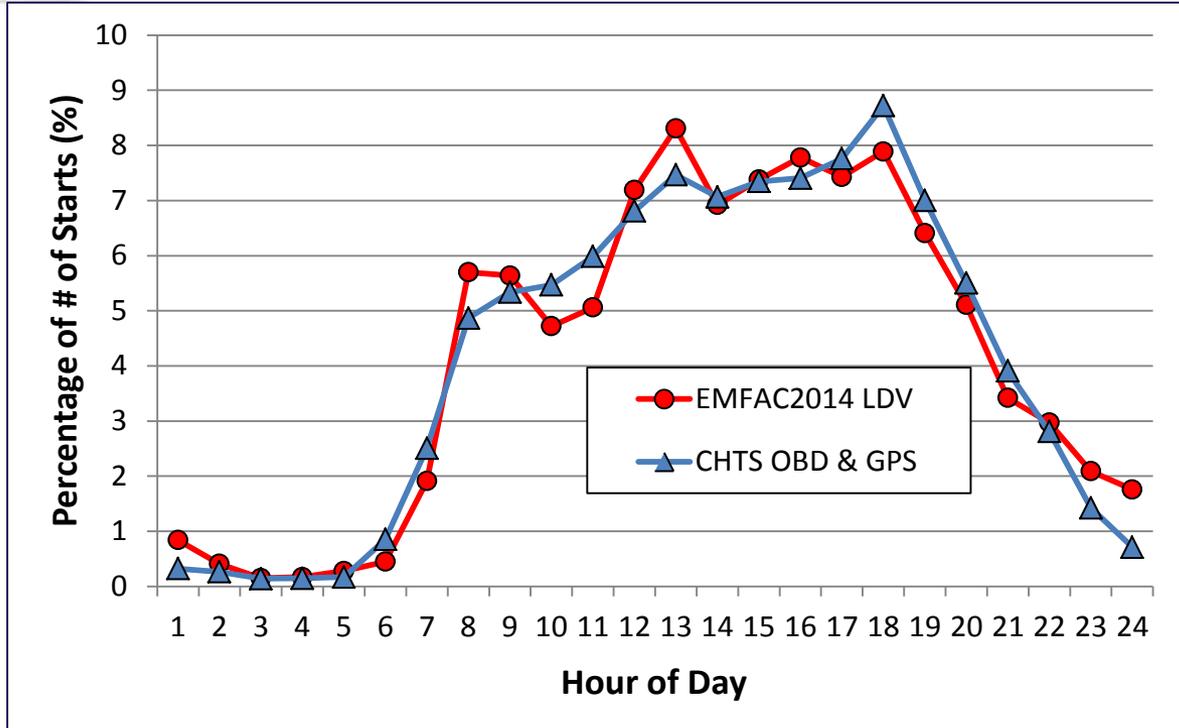
LDV Soak Time Distribution

Soak Time (min) Distribution
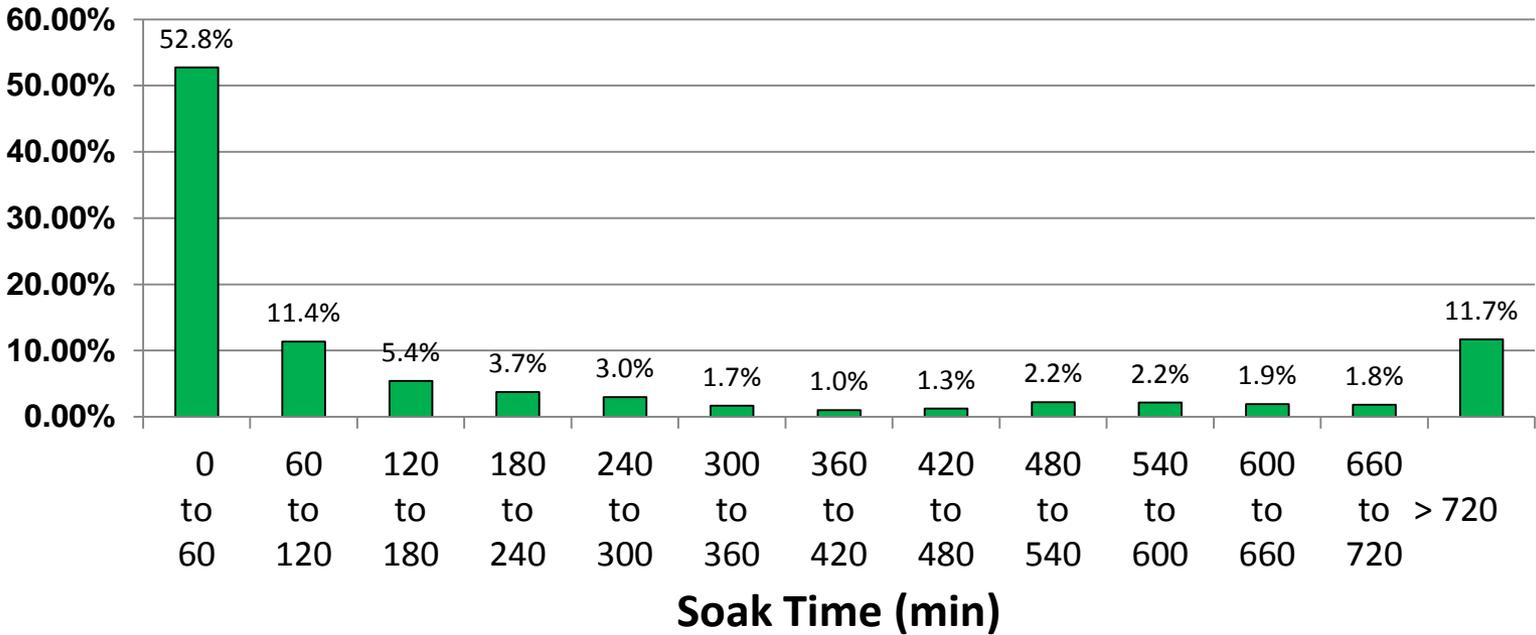
LDV Soak Time Distribution

Soak Time Period (min)	Hour of Day																								Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Total
5	0.02%	0.02%	0.00%	0.01%	0.03%	0.16%	0.33%	0.63%	0.90%	0.75%	0.81%	1.01%	1.09%	1.00%	1.11%	1.15%	1.32%	1.37%	1.00%	0.83%	0.50%	0.29%	0.20%	0.11%	14.64%
10	0.05%	0.01%	0.00%	0.00%	0.01%	0.03%	0.17%	0.29%	0.54%	0.55%	0.61%	0.74%	0.84%	0.87%	0.81%	0.83%	0.93%	0.94%	0.77%	0.49%	0.34%	0.25%	0.08%	0.03%	10.20%
20	0.01%	0.02%	0.01%	0.00%	0.00%	0.01%	0.05%	0.30%	0.42%	0.51%	0.67%	0.71%	0.86%	0.93%	0.84%	0.99%	0.84%	1.13%	0.78%	0.67%	0.35%	0.32%	0.10%	0.03%	10.58%
30	0.02%	0.01%	0.00%	0.00%	0.00%	0.00%	0.03%	0.08%	0.20%	0.27%	0.29%	0.45%	0.55%	0.56%	0.58%	0.56%	0.52%	0.67%	0.53%	0.39%	0.20%	0.11%	0.07%	0.05%	6.15%
40	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.07%	0.15%	0.21%	0.28%	0.28%	0.40%	0.43%	0.43%	0.36%	0.39%	0.48%	0.43%	0.35%	0.16%	0.11%	0.04%	0.03%	4.62%
50	0.00%	0.00%	0.01%	0.00%	0.00%	0.00%	0.03%	0.04%	0.14%	0.23%	0.24%	0.26%	0.26%	0.36%	0.31%	0.36%	0.24%	0.28%	0.35%	0.25%	0.16%	0.08%	0.02%	0.01%	3.63%
60	0.02%	0.00%	0.01%	0.00%	0.00%	0.00%	0.05%	0.03%	0.09%	0.16%	0.20%	0.16%	0.34%	0.27%	0.25%	0.22%	0.23%	0.22%	0.22%	0.20%	0.12%	0.10%	0.06%	0.01%	2.94%
120	0.04%	0.02%	0.01%	0.01%	0.00%	0.02%	0.04%	0.16%	0.28%	0.58%	0.69%	0.83%	0.77%	0.87%	1.01%	0.82%	0.92%	1.10%	1.02%	0.98%	0.62%	0.42%	0.16%	0.03%	11.38%
180	0.01%	0.03%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.04%	0.19%	0.24%	0.38%	0.45%	0.39%	0.37%	0.42%	0.39%	0.48%	0.45%	0.53%	0.38%	0.40%	0.21%	0.06%	5.41%
240	0.02%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	0.02%	0.08%	0.17%	0.35%	0.35%	0.25%	0.21%	0.33%	0.42%	0.43%	0.32%	0.16%	0.22%	0.17%	0.10%	0.09%	3.73%
300	0.01%	0.02%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	0.03%	0.17%	0.63%	0.24%	0.23%	0.18%	0.32%	0.41%	0.22%	0.17%	0.06%	0.10%	0.09%	0.06%	2.98%
360	0.02%	0.00%	0.00%	0.01%	0.01%	0.00%	0.01%	0.01%	0.01%	0.00%	0.00%	0.05%	0.13%	0.22%	0.24%	0.12%	0.11%	0.17%	0.19%	0.16%	0.07%	0.07%	0.03%	0.03%	1.68%
420	0.01%	0.01%	0.00%	0.01%	0.00%	0.00%	0.01%	0.03%	0.00%	0.00%	0.01%	0.00%	0.02%	0.05%	0.17%	0.16%	0.12%	0.16%	0.08%	0.06%	0.05%	0.03%	0.02%	0.00%	1.02%
480	0.00%	0.02%	0.00%	0.01%	0.00%	0.03%	0.02%	0.02%	0.03%	0.01%	0.00%	0.00%	0.00%	0.02%	0.11%	0.30%	0.28%	0.19%	0.09%	0.04%	0.02%	0.01%	0.03%	0.01%	1.26%
540	0.04%	0.02%	0.00%	0.01%	0.01%	0.04%	0.11%	0.10%	0.04%	0.02%	0.04%	0.00%	0.00%	0.02%	0.11%	0.29%	0.52%	0.40%	0.17%	0.14%	0.03%	0.06%	0.01%	0.01%	2.19%
600	0.01%	0.01%	0.00%	0.00%	0.01%	0.07%	0.21%	0.20%	0.13%	0.02%	0.01%	0.02%	0.00%	0.01%	0.02%	0.08%	0.36%	0.46%	0.29%	0.13%	0.08%	0.02%	0.02%	0.00%	2.18%
660	0.00%	0.00%	0.00%	0.00%	0.01%	0.10%	0.29%	0.39%	0.18%	0.09%	0.04%	0.02%	0.00%	0.00%	0.01%	0.00%	0.08%	0.24%	0.30%	0.11%	0.03%	0.01%	0.01%	0.01%	1.92%
720	0.00%	0.01%	0.00%	0.00%	0.02%	0.12%	0.28%	0.47%	0.28%	0.09%	0.06%	0.03%	0.01%	0.01%	0.02%	0.01%	0.08%	0.12%	0.09%	0.08%	0.03%	0.01%	0.00%	0.01%	1.81%
780	0.00%	0.00%	0.00%	0.00%	0.01%	0.13%	0.38%	0.44%	0.35%	0.17%	0.10%	0.02%	0.03%	0.00%	0.00%	0.01%	0.00%	0.00%	0.02%	0.02%	0.01%	0.02%	0.01%	0.00%	1.74%
840	0.00%	0.00%	0.00%	0.00%	0.01%	0.05%	0.27%	0.59%	0.38%	0.26%	0.16%	0.06%	0.03%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.01%	0.00%	0.03%	0.01%	0.00%	1.91%
900	0.00%	0.00%	0.00%	0.01%	0.00%	0.07%	0.15%	0.42%	0.35%	0.19%	0.09%	0.04%	0.04%	0.03%	0.02%	0.02%	0.00%	0.00%	0.01%	0.02%	0.01%	0.00%	0.00%	0.00%	1.46%
960	0.00%	0.00%	0.00%	0.00%	0.00%	0.02%	0.06%	0.19%	0.23%	0.15%	0.10%	0.10%	0.08%	0.05%	0.01%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.03%
1020	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	0.03%	0.17%	0.12%	0.09%	0.10%	0.05%	0.08%	0.02%	0.03%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	0.00%	0.71%
1080	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.03%	0.10%	0.13%	0.08%	0.07%	0.12%	0.04%	0.03%	0.05%	0.03%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.69%
1140	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.03%	0.04%	0.08%	0.06%	0.06%	0.08%	0.06%	0.03%	0.01%	0.04%	0.01%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.54%
1200	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	0.01%	0.06%	0.05%	0.03%	0.05%	0.05%	0.05%	0.06%	0.03%	0.03%	0.03%	0.02%	0.01%	0.01%	0.01%	0.00%	0.00%	0.00%	0.49%
1260	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	0.00%	0.04%	0.05%	0.05%	0.04%	0.05%	0.04%	0.02%	0.03%	0.02%	0.01%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.40%
1320	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	0.01%	0.03%	0.03%	0.03%	0.03%	0.02%	0.04%	0.03%	0.02%	0.02%	0.02%	0.01%	0.01%	0.01%	0.00%	0.00%	0.00%	0.32%
1380	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	0.01%	0.02%	0.01%	0.03%	0.04%	0.04%	0.02%	0.03%	0.00%	0.01%	0.01%	0.01%	0.01%	0.01%	0.00%	0.00%	0.00%	0.27%
1440	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.02%	0.02%	0.01%	0.02%	0.03%	0.01%	0.02%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.18%
2880	0.00%	0.00%	0.00%	0.00%	0.01%	0.06%	0.07%	0.12%	0.12%	0.12%	0.10%	0.08%	0.09%	0.07%	0.06%	0.09%	0.08%	0.11%	0.08%	0.06%	0.02%	0.02%	0.01%	0.00%	1.37%
4320	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	0.02%	0.07%	0.05%	0.05%	0.03%	0.01%	0.02%	0.02%	0.02%	0.01%	0.02%	0.00%	0.02%	0.01%	0.00%	0.00%	0.01%	0.00%	0.38%
5760	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	0.02%	0.01%	0.01%	0.01%	0.00%	0.00%	0.00%	0.01%	0.00%	0.00%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.10%
7200	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	0.01%	0.00%	0.00%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.06%
8640	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%
10080	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%
	0.30%	0.22%	0.07%	0.09%	0.16%	0.97%	2.75%	5.07%	5.42%	5.06%	5.40%	6.22%	7.38%	6.93%	7.17%	7.50%	8.31%	9.50%	7.51%	5.92%	3.52%	2.63%	1.30%	0.60%	100.00%

Updates on Mileage Accrual Rates

- Gasoline LDVs
  - Data source: 2001-2014 BAR Smog Check data
  - Accrual between smog check tests per VIN
  - Methodology update: non-logarithmic regression instead of logarithmic regression based on age
  - Accrual trends developed at sub area, regional or statewide level depending on data availability

- Diesel LDVs:
  - Assuming same as gasoline LDVs

- Electric LDVs:
  - Data source: Telematics data from four major OEMs
  - 70% of average gasoline annual LDV accrual rate in the base year of 2016, raising to 100% by 2025

Mileage Accrual Rate Methodology

PC Statewide Mileage Accrual Rates
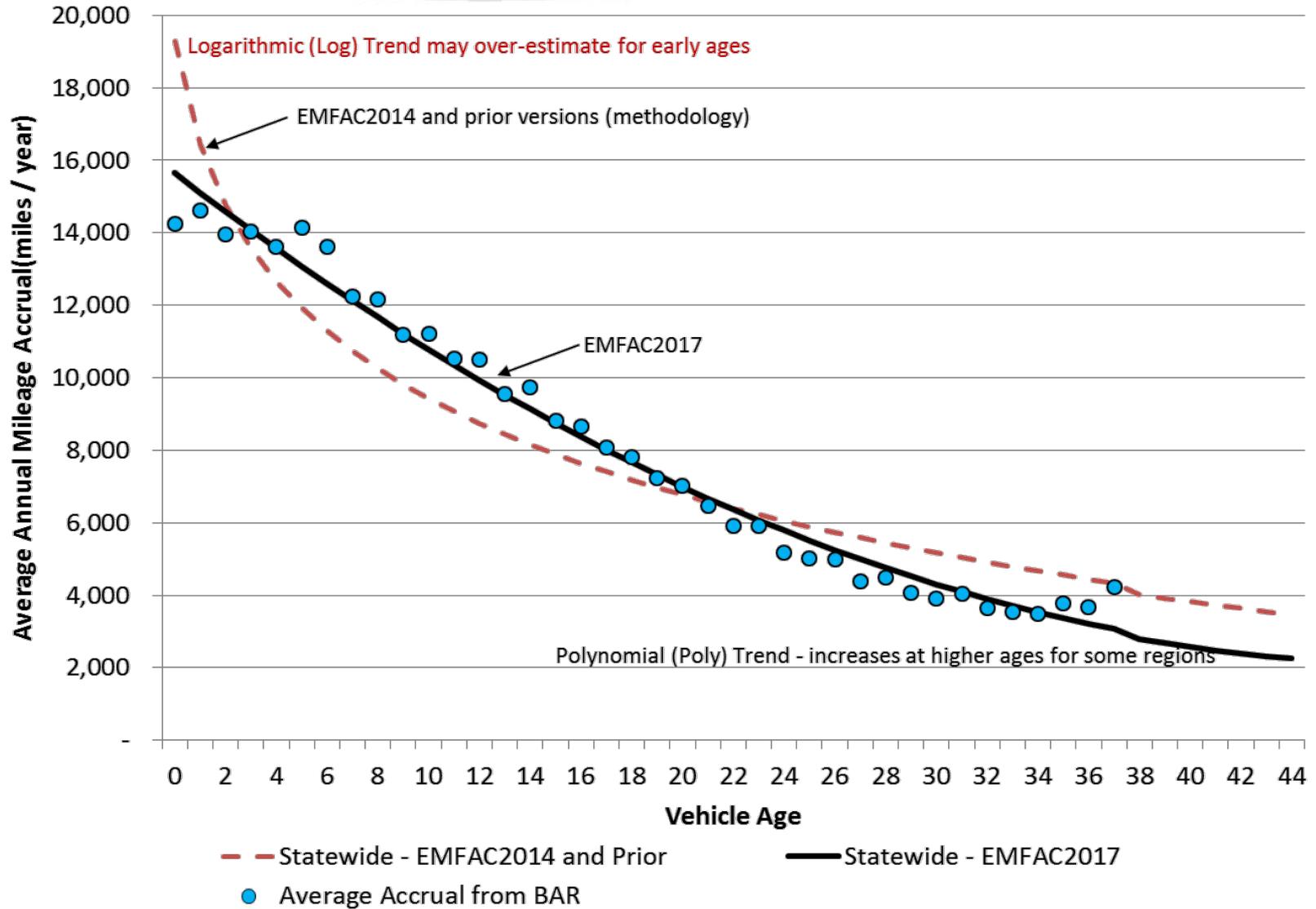
Lead Staff Contact

Zhen Dai
Air Resources Engineer
(916) 322-7455
zhen.dai@arb.ca.gov

or

EMFAC@arb.ca.gov

Vehicle Activity Profiles

Heavy Duty Vehicles

Outline

- Background

- New Data Source: CE-CERT study

- EMFAC Updates
  - ❑ Speed distribution
  - ❑ Number of starts and soak time distribution
  - ❑ Idle hours

- Summary
  - ❑ Activity profiles vary greatly by vocational category
  - ❑ More low-speed VMT than previously assumed
  - ❑ Less cold starts per day for several major categories
  - ❑ Less number of idle hours per day for most categories

Background

- HDTs activity profiles vary greatly by vocations

- 2010+ model year HDTs produce significant NOx Emissions during low speed and during cold start
  - Selective Catalytic Reduction (SCR) require to be at certain temperature to be effective.

- Lack of update on HDT activity data in EMFAC2014 and prior versions, including,
  - HDT Speed distribution in regions other than SCAG
  - Number of starts and soak time distribution
  - Idle hours

New Data Source: CE-CERT Study

- CARB's contract 13-301 (2014)

- Vehicle Sampling
  - (90) 2010 or newer HHDVs
  - (19) vocational/regional groups

- Data Collection
  - Wi-Fi or Cellular-based GPS & ECU data loggers
  - 1 Hz data frequency, a minimum of one month each
  - Vehicle and engine information
    - vehicle make, model, year, GVWR, engine model, etc.

Recruited Trucks by Vocation

- Line haul
- Drayage
- Agricultural
- Construction
- Food/beverage distribution
- Shuttle
- Refuse
- Transit buses
- Public work
- Utility
- Express buses

Speed Distribution

EMFAC2014 Speed Distribution

HHDT - SCAB

Hour of Day	Speed Bin															
	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.1	0.0	0.2	0.4	1.6	1.1	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.1	0.6	0.4	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.1	0.0	0.1	0.3	1.2	0.8	0.0	0.0	0.0
4	0.0	0.0	0.0	0.1	0.1	0.4	0.4	0.2	0.1	0.3	0.6	2.9	2.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.1	0.0	0.1	0.3	1.5	1.1	0.0	0.0	0.0
6	0.0	0.0	0.0	0.1	0.1	0.3	0.3	0.1	0.1	0.2	0.5	2.3	1.6	0.0	0.0	0.0
7	0.0	0.1	0.2	0.5	1.1	1.5	1.1	1.0	0.8	0.5	0.4	0.4	0.3	0.0	0.0	0.0
8	0.0	0.1	0.2	0.4	0.9	1.2	0.9	0.8	0.6	0.4	0.4	0.4	0.3	0.0	0.0	0.0
9	0.0	0.0	0.1	0.3	0.7	1.0	0.8	0.7	0.5	0.3	0.3	0.3	0.2	0.0	0.0	0.0
10	0.0	0.0	0.0	0.2	0.5	0.8	0.6	0.8	1.0	0.9	0.6	0.5	0.4	0.0	0.0	0.0
11	0.0	0.0	0.0	0.2	0.6	0.8	0.6	0.8	1.0	0.9	0.6	0.5	0.5	0.0	0.0	0.0
12	0.0	0.0	0.0	0.2	0.5	0.8	0.6	0.8	1.0	0.9	0.6	0.5	0.4	0.0	0.0	0.0
13	0.0	0.0	0.0	0.2	0.5	0.7	0.5	0.7	0.9	0.8	0.5	0.4	0.4	0.0	0.0	0.0
14	0.0	0.0	0.0	0.2	0.5	0.7	0.5	0.7	0.9	0.8	0.5	0.4	0.4	0.0	0.0	0.0
15	0.0	0.0	0.0	0.1	0.4	0.5	0.4	0.5	0.7	0.6	0.4	0.3	0.3	0.0	0.0	0.0
16	0.0	0.1	0.2	0.4	0.6	0.5	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0
17	0.0	0.1	0.2	0.5	0.8	0.7	0.4	0.3	0.2	0.1	0.1	0.2	0.1	0.0	0.0	0.0
18	0.0	0.0	0.1	0.2	0.4	0.3	0.2	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.0	0.0
19	0.0	0.1	0.2	0.4	0.6	0.5	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0
20	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.5	0.3	0.0	0.0	0.0
21	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.1	0.0	0.1	0.3	1.4	1.0	0.0	0.0	0.0
22	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.1	0.0	0.1	0.3	1.3	0.9	0.0	0.0	0.0
23	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.5	0.4	0.0	0.0	0.0
24	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.1	0.5	0.4	0.0	0.0	0.0

HHDT – Non SCAB/MDAB

Hour of Day	Speed Bin															
	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	0.0	0.0	0.0	0.2	0.0	0.1	0.3	0.3	0.9	0.9	0.7	0.3	0.2	0.0	0.0	0.0
2	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.3	0.3	0.2	0.1	0.1	0.0	0.0	0.0
3	0.0	0.0	0.0	0.2	0.0	0.1	0.2	0.3	0.7	0.7	0.5	0.2	0.1	0.0	0.0	0.0
4	0.0	0.0	0.1	0.4	0.1	0.2	0.4	0.6	1.7	1.6	1.3	0.5	0.3	0.0	0.0	0.0
5	0.0	0.0	0.0	0.2	0.0	0.1	0.2	0.3	0.9	0.8	0.7	0.3	0.2	0.0	0.0	0.0
6	0.0	0.0	0.0	0.3	0.0	0.2	0.4	0.5	1.3	1.2	1.0	0.4	0.2	0.0	0.0	0.0
7	0.1	0.2	0.2	0.4	0.6	0.8	1.4	0.9	1.3	0.8	0.9	0.2	0.2	0.0	0.0	0.0
8	0.1	0.2	0.2	0.4	0.5	0.7	1.1	0.7	1.1	0.6	0.7	0.1	0.1	0.0	0.0	0.0
9	0.0	0.1	0.1	0.3	0.4	0.6	0.9	0.6	0.9	0.5	0.6	0.1	0.1	0.0	0.0	0.0
10	0.0	0.2	0.2	0.3	0.3	0.6	0.9	1.0	0.5	0.9	1.2	0.1	0.2	0.0	0.0	0.0
11	0.0	0.2	0.2	0.3	0.3	0.7	0.9	1.0	0.5	0.9	1.2	0.1	0.2	0.0	0.0	0.0
12	0.0	0.2	0.2	0.3	0.3	0.6	0.9	1.0	0.5	0.9	1.2	0.1	0.2	0.0	0.0	0.0
13	0.0	0.0	0.1	0.2	0.2	0.3	0.8	0.7	0.9	0.8	1.4	0.2	0.1	0.0	0.0	0.0
14	0.0	0.0	0.1	0.2	0.2	0.3	0.8	0.7	0.9	0.8	1.5	0.2	0.1	0.0	0.0	0.0
15	0.0	0.0	0.1	0.1	0.2	0.2	0.6	0.5	0.7	0.6	1.1	0.1	0.1	0.0	0.0	0.0
16	0.0	0.0	0.0	0.1	0.1	0.3	0.6	0.4	0.4	0.2	0.5	0.1	0.0	0.0	0.0	0.0
17	0.0	0.0	0.1	0.1	0.1	0.4	0.9	0.5	0.5	0.2	0.8	0.1	0.0	0.0	0.0	0.0
18	0.0	0.0	0.0	0.0	0.1	0.2	0.4	0.2	0.2	0.1	0.4	0.0	0.0	0.0	0.0	0.0
19	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.2	0.2	0.7	0.7	0.5	0.2	0.0	0.0	0.0
20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.3	0.2	0.1	0.0	0.0	0.0
21	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.2	0.3	0.8	0.9	0.7	0.2	0.0	0.0	0.0
22	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.2	0.3	0.8	0.9	0.6	0.2	0.0	0.0	0.0
23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.3	0.2	0.1	0.0	0.0	0.0
24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.4	0.3	0.1	0.0	0.0	0.0

- Speed profiles vary in SCAG vs. non-SCAG areas
  - Updated HD speed profiles will only apply to non-SCAG areas
- No VMT above 70 mph
- Barely any VMT in low speed bins (5~15 mph) : 2~3%
- Activities spread out through the day

New Vocational Speed Distributions

In-State HHD Tractor

Hour of Day	Speed Bin															
	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.3	1.2	1.3	0.4	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.5	0.2	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.3	0.8	1.0	0.5	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.3	1.1	3.0	2.0	0.1	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	1.0	1.4	0.6	0.0	0.0
6	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.6	1.8	1.4	0.6	0.0	0.0
7	0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.5	1.0	2.5	1.8	0.6	0.0	0.0
8	0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.4	0.8	2.2	1.4	0.1	0.0	0.0
9	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.7	2.3	0.8	0.2	0.0	0.0
10	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.4	1.1	2.8	1.0	0.1	0.0	0.0
11	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.4	0.9	3.0	1.1	0.1	0.0	0.0
12	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.4	1.0	2.8	1.1	0.1	0.0	0.0
13	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.3	0.8	2.7	0.9	0.1	0.0	0.0
14	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.7	2.8	1.1	0.2	0.0	0.0
15	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.4	2.0	0.7	0.2	0.0	0.0
16	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.3	1.0	0.7	0.0	0.0	0.0
17	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.5	1.3	0.9	0.0	0.0	0.0
18	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.4	0.4	0.4	0.0	0.0	0.0
19	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.7	0.9	0.1	0.0	0.0	0.0
20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.4	0.1	0.0	0.0
21	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.5	1.2	0.9	0.2	0.0	0.0
22	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.3	0.9	0.9	0.4	0.0	0.0	0.0
23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.4	0.2	0.0	0.0
24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.5	0.3	0.0	0.0

In-State HHD Single

Hour of Day	Speed Bin															
	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.8	1.9	0.7	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.6	0.3	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.4	1.3	0.8	0.1	0.0	0.0	0.0
4	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.7	3.0	2.5	0.1	0.0	0.0	0.0
5	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.5	1.4	1.2	0.0	0.0	0.0	0.0
6	0.0	0.1	0.1	0.1	0.2	0.3	0.4	0.3	0.3	0.7	1.4	1.2	0.3	0.0	0.0	0.0
7	0.1	0.3	0.3	0.4	0.4	0.5	0.4	0.3	0.3	0.6	1.7	1.4	1.1	0.1	0.0	0.0
8	0.1	0.2	0.3	0.4	0.6	0.7	0.6	0.4	0.3	0.4	0.7	1.0	0.7	0.0	0.0	0.0
9	0.1	0.2	0.3	0.4	0.5	0.7	0.5	0.3	0.2	0.3	0.6	0.8	0.4	0.0	0.0	0.0
10	0.2	0.3	0.4	0.6	1.0	0.8	0.4	0.2	0.2	0.5	0.4	0.3	0.0	0.0	0.0	0.0
11	0.2	0.3	0.4	0.6	0.8	1.2	1.0	0.5	0.2	0.2	0.3	0.3	0.6	0.0	0.0	0.0
12	0.2	0.3	0.4	0.6	0.9	1.1	0.9	0.4	0.2	0.2	0.4	0.4	0.4	0.0	0.0	0.0
13	0.1	0.2	0.3	0.5	0.7	0.9	0.7	0.4	0.2	0.2	0.4	0.5	0.4	0.1	0.0	0.0
14	0.1	0.3	0.3	0.5	0.6	0.8	0.7	0.4	0.3	0.3	0.6	0.4	0.4	0.0	0.0	0.0
15	0.0	0.1	0.2	0.2	0.3	0.3	0.3	0.2	0.2	0.6	1.1	0.4	0.2	0.0	0.0	0.0
16	0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.3	0.7	0.5	0.0	0.0	0.0	0.0
17	0.0	0.1	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.3	0.8	1.0	0.2	0.0	0.0	0.0
18	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.4	0.3	0.1	0.0	0.0	0.0
19	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.8	0.5	0.1	0.0	0.0	0.0
20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.4	0.3	0.0	0.0	0.0	0.0
21	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.6	1.4	0.7	0.0	0.0	0.0	0.0
22	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.4	1.5	0.7	0.0	0.0	0.0	0.0
23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.6	0.2	0.0	0.0	0.0	0.0
24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.6	0.3	0.0	0.0	0.0	0.0

- Activity patterns vary greatly by vocation
- More observations in both high and low end of speed bins than EMFAC2014 assumption. In particular, 2~21 % VMT observed in low speed bins (5-15 mph) depending on vocational category
- Wide spread activity in all hours of a day implies the lack of "cold starts"

New Vocational Speed Distributions

Inter-State HHDT

Hour of Day	Speed Bin															
	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.4	2.2	0.7	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.8	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.9	1.4	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.2	0.7	2.5	3.4	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	1.0	2.4	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.5	1.6	3.2	0.0	0.0	0.0
7	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.5	1.7	4.9	0.0	0.0	0.0
8	0.1	0.2	0.3	0.4	0.4	0.3	0.2	0.2	0.2	0.3	0.5	1.2	2.1	0.0	0.0	0.0
9	0.1	0.3	0.4	0.4	0.3	0.3	0.3	0.2	0.2	0.2	0.3	1.2	1.3	0.0	0.0	0.0
10	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.4	1.8	2.7	0.0	0.0	0.0
11	0.0	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.4	2.0	3.4	0.0	0.0	0.0
12	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.5	1.9	3.2	0.0	0.0	0.0
13	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.5	1.6	3.0	0.0	0.0	0.0
14	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.5	1.6	2.9	0.0	0.0	0.0
15	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.4	1.1	2.2	0.0	0.0	0.0
16	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.6	1.4	0.0	0.0	0.0	0.0
17	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.3	0.8	1.9	0.1	0.0	0.0
18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.9	0.1	0.0	0.0
19	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.5	1.6	0.1	0.0	0.0
20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.7	0.1	0.0	0.0
21	0.2	0.7	0.3	1.1	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.2	0.6	2.0	0.0	0.0	0.0
23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.8	0.0	0.0	0.0
24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.5	0.6	0.0	0.0	0.0

SWCV

Hour of Day	Speed Bin															
	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	1.1	1.7	1.6	1.1	1.2	0.8	0.6	0.5	0.3	0.2	0.1	0.3	0.0	0.0	0.0	0.0
7	1.3	1.6	1.7	0.9	0.9	0.9	0.8	0.6	0.6	0.5	0.5	1.2	0.0	0.0	0.0	0.0
8	1.2	1.3	1.3	1.0	1.2	1.2	1.3	1.5	1.7	1.8	1.5	2.7	0.0	0.0	0.0	0.0
9	1.3	1.6	1.4	1.0	1.1	1.1	1.1	1.0	1.0	1.1	0.8	0.7	0.0	0.0	0.0	0.0
10	1.2	1.5	1.4	1.0	1.2	1.2	1.3	1.3	1.0	0.9	0.6	1.0	0.0	0.0	0.0	0.0
11	0.9	1.1	1.2	1.2	1.6	1.5	1.8	2.1	2.3	2.0	1.2	1.2	0.0	0.0	0.0	0.0
12	0.5	0.4	0.5	0.7	1.0	1.0	1.1	1.2	1.3	1.0	0.8	0.8	0.0	0.0	0.0	0.0
13	0.1	0.1	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.2	0.1	0.2	0.1	0.0	0.0	0.0
14	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0
15	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0
16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Construction HHDT

Hour of Day	Speed Bin															
	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.1	0.1	0.7	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.4	0.3	0.2	0.2	1.5	0.0	0.0	0.0	0.0
4	0.1	0.1	0.1	0.1	0.3	0.3	0.4	0.5	0.7	0.3	0.5	3.2	0.5	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.6	0.4	1.1	0.9	0.0
6	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.3	0.5	1.4	1.2	0.6	0.6	0.1
7	0.1	0.2	0.1	0.1	0.2	0.2	0.3	0.4	0.5	0.6	0.7	2.9	1.6	0.0	0.0	0.0
8	0.1	0.2	0.2	0.2	0.3	0.3	0.4	0.4	0.6	0.6	0.6	1.8	0.7	0.0	0.0	0.0
9	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.4	0.4	0.5	1.8	0.9	0.1	0.0	0.0
10	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.4	0.5	0.5	0.6	2.1	0.9	0.0	0.0	0.0
11	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.4	0.5	0.5	0.6	2.3	1.0	0.0	0.0	0.0
12	0.1	0.2	0.1	0.1	0.2	0.2	0.3	0.4	0.4	0.5	0.7	2.0	1.0	0.0	0.0	0.0
13	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.4	0.6	1.8	1.0	0.0	0.0	0.0
14	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.4	0.5	1.8	1.0	0.0	0.0	0.0
15	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.4	1.0	0.8	0.2	0.1	0.0
16	0.0	0.1	0.1	0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.4	0.5	0.3	0.2	0.0
17	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.7	0.9	0.3	0.1	0.0
18	0.8	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	1.1	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	0.4	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21	1.7	1.2	0.1	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22	1.4	1.7	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23	0.3	0.4	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	0.9	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Utility HHDT

Hour of Day	Speed Bin															
	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	0.0	0.1	0.2	0.1	0.2	0.2	0.2	0.5	0.4	0.4	1.0	0.7	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.2	0.2	0.2	0.0	0.0	0.0	0.0
3	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.4	0.4	0.5	0.8	0.3	0.0	0.0	0.0	0.0
4	0.1	0.1	0.2	0.2	0.1	0.3	0.3	0.7	0.7	1.0	1.5	1.8	0.0	0.0	0.0	0.0
5	0.0	0.1	0.1	0.1	0.2	0.2	0.5	0.9	0.5	0.2	0.6	0.2	0.0	0.0	0.0	0.0
6	0.0	0.1	0.1	0.1	0.2	0.2	0.3	0.5	0.5	0.7	1.2	1.8	0.0	0.0	0.0	0.0
7	0.3	2.0	1.0	0.2	0.3	0.4	0.5	0.7	0.8	0.7	1.0	0.2	0.0	0.0	0.0	0.0
8	0.1	0.4	0.3	0.3	0.4	0.6	0.7	0.9	1.0	0.8	0.7	0.2	0.0	0.0	0.0	0.0
9	0.1	0.2	0.3	0.3	0.4	0.5	0.6	0.8	0.8	0.6	0.6	0.2	0.0	0.0	0.0	0.0
10	0.1	0.3	0.3	0.3	0.3	0.4	0.5	0.8	0.8	0.7	1.2	0.7	0.0	0.0	0.0	0.0
11	0.1	0.2	0.3	0.3	0.4	0.5	0.6	0.7	0.7	0.7	1.1	0.9	0.0	0.0	0.0	0.0
12	0.1	0.3	0.3	0.4	0.4	0.5	0.5	0.6	0.7	0.7	1.1	0.8	0.0	0.0	0.0	0.0
13	0.1	0.2	0.3	0.3	0.3	0.4	0.4	0.5	0.5	0.6	1.1	0.8	0.0	0.0	0.0	0.0
14	0.1	0.2	0.3	0.3	0.3	0.4	0.5	0.6	0.6	0.6	1.1	0.8	0.0	0.0	0.0	0.0
15	0.0	0.2	0.2	0.2	0.2	0.3	0.4	0.4	0.4	0.4	0.8	0.6	0.0	0.0	0.0	0.0
16	0.0	0.1	0.2	0.1	0.2	0.2	0.2	0.3	0.3	0.4	0.4	0.3	0.0	0.0	0.0	0.0
17	0.1	0.2	0.2	0.2	0.3	0.4	0.4	0.5	0.5	0.4	0.4	0.3	0.0	0.0	0.0	0.0
18	0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0
19	0.0	0.1	0.2	0.1	0.2	0.2	0.3	0.4	0.2	0.1	0.4	0.4	0.0	0.0	0.0	0.0
20	0.0	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.0	0.0	0.0	0.0
21	0.0	0.1	0.2	0.1	0.2	0.3	0.3	0.3	0.4	0.3	0.5	0.5	0.0	0.0	0.0	0.0
22	0.0	0.1	0.1	0.1	0.2	0.2	0.3	0.5	0.4	0.4	0.5	0.1	0.0	0.0	0.0	0.0
23	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.1	0.4	0.1	0.0	0.0	0.0	0.0
24	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.4	0.2	0.0	0.0	0.0	0.0	0.0

HD Starts per day
&
Soak Time Distribution

EMFAC 2014 Assumptions

- Source: CE-CERT 2009 telematics data

- Number of starts per day

Truck Service Type	Cold Start	Warm Start	Cold and Warm Total
Long-Haul	1	1.53	2.53
Short-Haul	1	1.04	2.04
Drayage	1	1.76	2.76

- A cold start is defined as an engine start after soaking for 12 hours or longer (overnight soak)

- A warm start is defined as an engine start after soaking for 30 minutes or longer but less than 12 hours

- Starts with soaking time less than 30 minutes are not accounted for

New Starts per Day Assumption

Truck Vocational Category	Starts per Day *
Inter-State Trucks	10.80
In-State Tractor Trucks	14.80
In-State Single Trucks	11.66
Drayage Trucks	12.40
Agriculture Trucks	4.10
Construction Trucks	5.91
Solid Waste Collection Trucks	3.80
Public Trucks	2.24
Utility Trucks	10.90

* Starts here includes all hot, warm and cold starts

Soak Time Distribution
Examples

Instate Tractor

Hour of Day	Soak Time (minutes)																		
	5	10	20	30	40	50	60	120	180	240	300	360	420	480	540	600	660	720	721+
1	3.7	0.7	0.3	0	0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
2	5.4	1.0	0.4	0	1	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
3	0.7	0.3	0.2	0	1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	1.3	0.2	0.7	0	2	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
5	1.1	0.2	0.1	0	1	0.0	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
6	2.1	0.7	0.3	0	1	0.1	0.1	0.1	0.3	0.3	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.3
7	1.5	0.3	0.7	0	1	0.1	0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
8	2.3	0.7	0.6	0	1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1
9	3.1	0.3	0.6	0	1	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
10	2.4	0.7	0.3	0	2	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
11	4.1	0.7	0.5	0	3	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
12	3.6	0.7	0.7	0	0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	3.5	0.4	0.5	0	2	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
14	2.7	1.1	0.4	0	1	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
15	3.1	0.5	0.7	0	1	0.1	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
16	1.9	0.7	0.4	0	3	0.1	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	2.2	0.6	0.3	0	0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1
18	2.4	0.7	0.4	0	3	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	2.4	0.3	0.3	0	0	0.1	0.0	0.2	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
20	2.9	0.5	0.3	0	1	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21	2.8	0.5	0.3	0	1	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
22	2.6	0.4	0.3	0	1	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23	3.7	0.6	0.3	0	0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
24	3.1	0.5	0.2	0	1	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Instate Singles

Hour of Day	Soak Time (minutes)																		
	5	10	20	30	40	50	60	120	180	240	300	360	420	480	540	600	660	720	721+
1	2.3	0.6	0.6	0.1	0.2	0.3	0.2	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
2	1.7	0.5	0.5	0.2	0.1	0.2	0.2	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
3	1.2	0.5	0.3	0.1	0.2	0.2	0.1	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	1.3	0.6	0.2	0.1	0.2	0.1	0.1	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	0.9	0.4	0.3	0.1	0.1	0.1	0.1	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
6	0.9	0.5	0.3	0.0	0.1	0.1	0.1	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.3
7	0.9	0.4	0.4	0.2	0.1	0.1	0.1	0.3	0.1	0.1	0.0	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.7
8	0.6	0.5	0.6	0.2	0.1	0.1	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.4
9	0.6	0.3	0.6	0.2	0.1	0.2	0.1	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
10	0.4	0.2	0.4	0.3	0.2	0.1	0.1	0.5	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
11	0.4	0.3	0.4	0.3	0.2	0.2	0.1	0.4	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	0.4	0.2	0.5	0.3	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	0.4	0.2	0.4	0.2	0.2	0.2	0.1	0.3	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	1.5	0.8	0.4	0.3	0.2	0.1	0.2	0.3	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.1	0.1	0.1	0.3
15	1.9	0.6	0.4	0.3	0.2	0.1	0.3	0.0	0.1	0.1	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.3
16	2.7	0.5	0.3	0.2	0.2	0.1	0.1	0.4	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1
17	2.5	0.4	0.5	0.2	0.2	0.1	0.0	0.3	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.3
18	2.7	0.4	0.2	0.2	0.3	0.1	0.1	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
19	2.4	0.4	0.4	0.3	0.2	0.1	0.1	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
20	3.9	0.7	0.6	0.4	0.3	0.1	0.1	0.2	0.1	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.4
21	3.2	0.5	0.7	0.6	0.3	0.2	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
22	2.1	0.7	0.7	0.4	0.4	0.3	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
23	2.3	0.4	0.7	0.3	0.4	0.3	0.1	0.5	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	2.5	0.3	0.5	0.3	0.3	0.2	0.3	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1

Instate Tractor
- 1.3 starts (9%) with greater than 30 minutes soak (cold or warm starts)
- Continuous operation throughout the day

Instate Singles
- 3.7 starts (32%) with greater than 30 minutes soak
- Likely more start emissions

Idle hours

Extended Idle Hours per Day
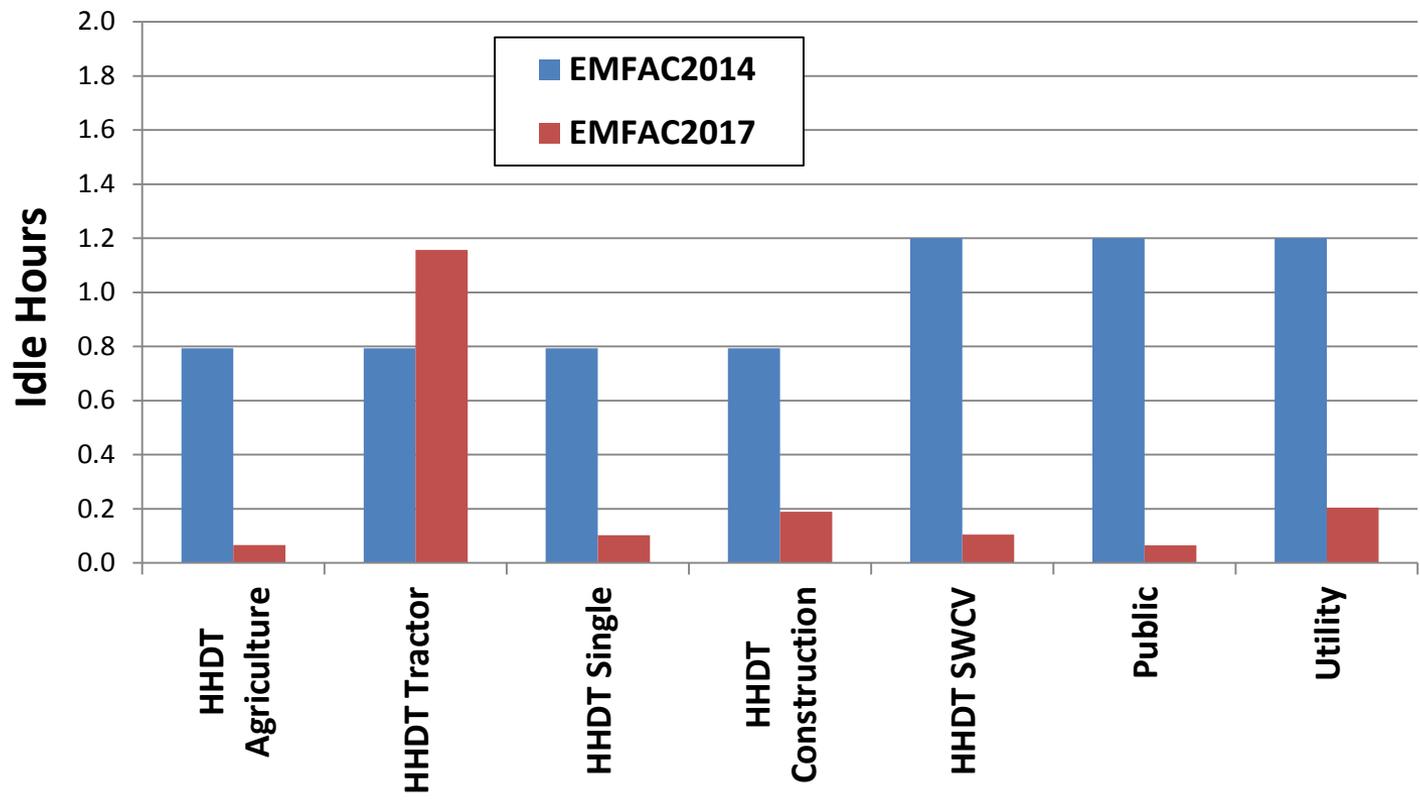
- 2008+ model year HHDTs in calendar year 2008 and beyond

Summary

- Activity profiles vary greatly by vocational category

- For most categories, greater portion of low-speed activities observed than previous EMFAC's assumption

- Lower number of cold starts per day for several major categories including line hauls and drayage trucks

- Lower number of idle hours per day for most categories

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GHG Module

Introduction

- CO_2 emissions can be estimated in EMFAC2014 or prior, but they do not represent CARB's official GHG inventory.

- CH_4 is directly estimated in EMFAC2014, using organic gas speciation profiles.

- N_2O is not included in EMFAC2014 or prior.

- GHG estimation will be improved in EMFAC2017 in order to support official CARB efforts.

- EMFAC2017 will include 3 GHGs: CO_2, CH_4, N_2O.

  - F-gases are not included in EMFAC as they are already provided from CARB's ODS Substitutes Emissions Model.

Major updates to EMFAC

- CO_2 will be calculated based on complete combustion of fuel.

- EMFAC2017 fuel consumption will be matched to BOE fuel sales.

- Fuel efficiency assumptions have been updated based on federal fuel efficiency data.

- Analysis of HD testing data indicates HD N_2O emission factors significantly higher than previously thought.
  - CARB, WVU, and SCAQMD testing data, UC Berkeley study

- Preliminary results show that the new methodology will increase total on-road CO2e emissions estimated in EMFAC by ~5%.
  - CO_2 estimates increase by ~3%, CH_4 essentially no change, N_2O increase by ~1.5x

CO_2 calculation approach

- CO_2 currently calculated in EMFAC2014 and prior, using g/mi emission rates from vehicle testing data.

- EMFAC2017 will calculate CO_2 emissions based on complete combustion of fuel.

- The new method is consistent with CARB's official GHG emission inventory, U.S. EPA, and IPCC recommended approaches.

- CO_2 estimates from complete combustion of fuel will be slightly (~3%) higher than in EMFAC2014.

CO_2 calculation approach (Cont'd)

- The new approach will disaggregate a fuel blend into major components, and then calculate CO_2 from each component of the fuel. Add up all components to get total CO_2 emissions.

CO_2 = Fuel Consumption * Blend Proportion * CO_2 Emission Factor * Heat Content

- Uses BOE, MRR, CEC, U.S. EPA data sources.

- EMFAC2017 fuel consumption is matched to BOE numbers to ensure CO_2 estimates aligned with real-world official mobile fuel sales in California.

Fleet average fuel efficiency and CO_2 emission rates

- Identify the fuel efficiency rating for California's vehicle fleet:
  - Decode VIN numbers in DMV registration data to obtain make, model, and other vehicle attributes
  - Match make, model, and vehicle attributes to a record in fueleconomy.gov to obtain EPA rated fuel efficiency for each individual vehicle.

- The EPA rated fuel efficiency values are then used to calculate the California fleet average fuel efficiency and CO_2 emission rates.

Comparison of fleet average CO_2 emission rates
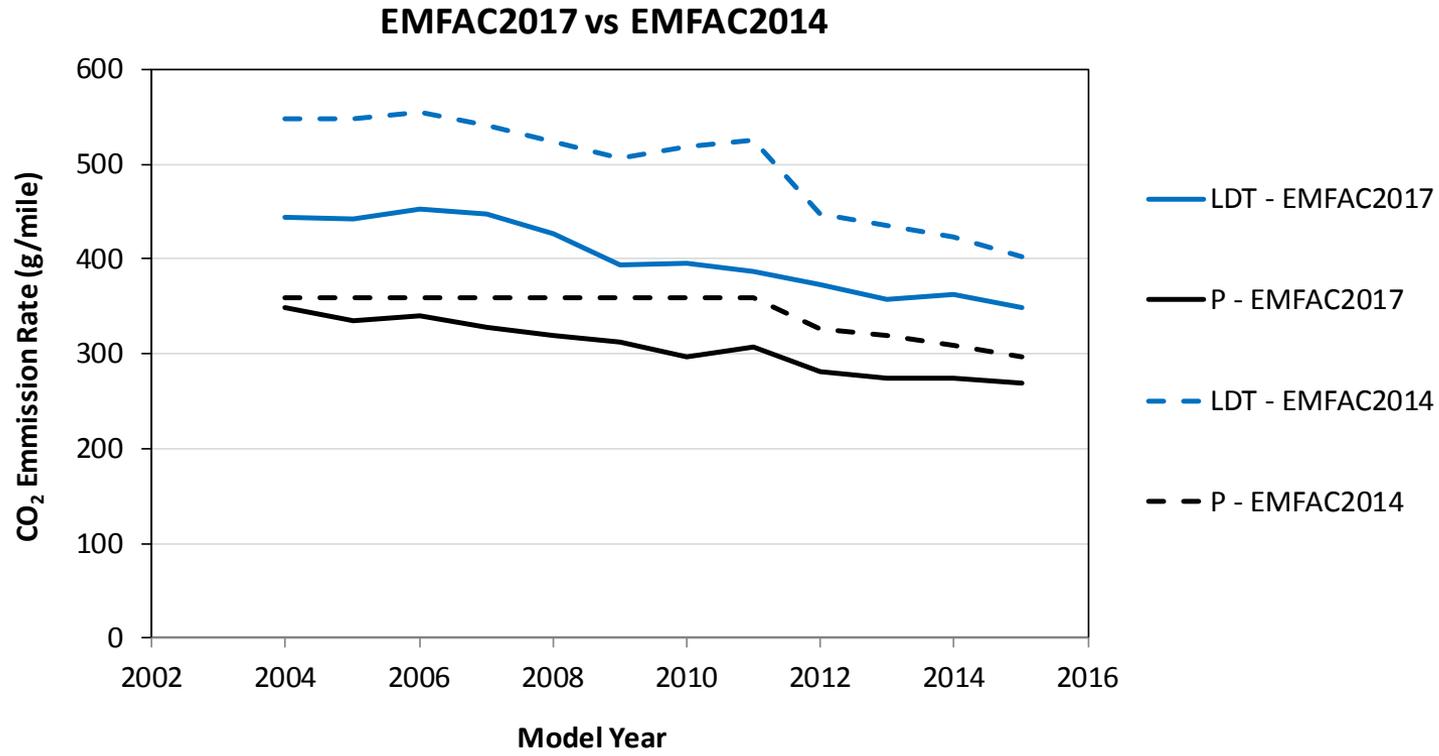
Updated fleet average CO_2 emission rates by model year are lower in EMFAC2017.

CH_4 calculation approach

- CH_4 currently calculated in EMFAC2014 and prior from THC, using speciation profiles.

- EMFAC2017 will
  - estimate LDV CH_4 as a function of THC emissions.
  - continue using speciation to estimate HD CH_4 emissions.

- Utilize the latest available ARB vehicle testing data.

CH_4 calculation approach (cont'd)

- Use FTP composite emission rates, considered as weighted average of major emission processes.

- Develop a relationship of CH_4 and THC from LDVs.

- A power function better captures the majority of activity which occurs at low THC emission rate levels.
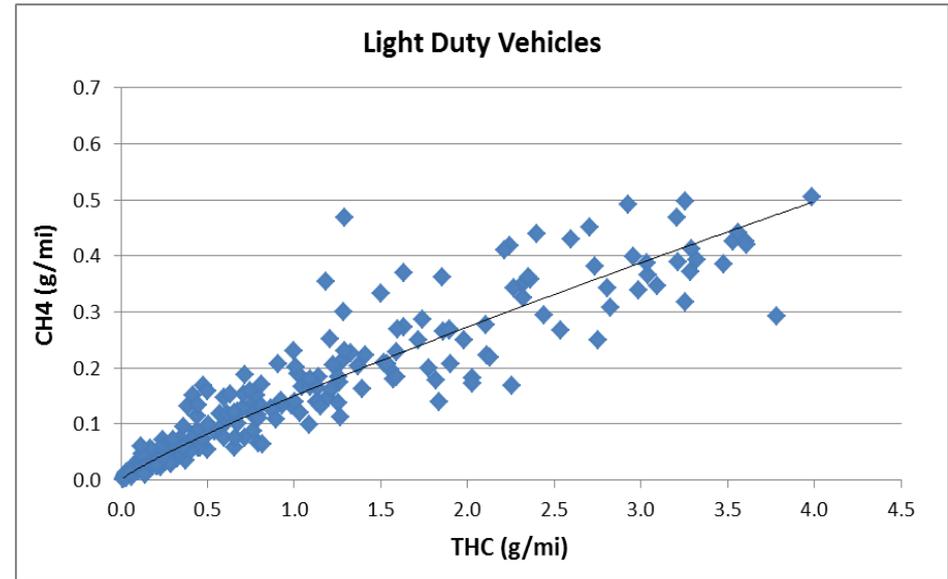
Source: CARB VEDS Data

N_2O calculation approach

- N_2O was not directly estimated in EMFAC2014 or prior.

- Currently, N_2O is calculated off-model.

- EMFAC2017 will
  - estimate LDV N_2O as a function of NOx emissions.
  - estimate HD diesel N_2O using fuel consumption and an improved fuel-based emission factor.

- Utilize the latest available vehicle testing data:
  - CARB Surveillance Data (for LDV)
  - "Cross California" campaign data (for HD)

LDV N_2O calculation approach

- As with the CH_4 analysis, use FTP composite emission rates.

- Develop a relationship of N_2O and NOx from LDVs.

- A power function better captures the majority of activity which occurs at low NOx emission rate levels.

Light Duty Vehicles
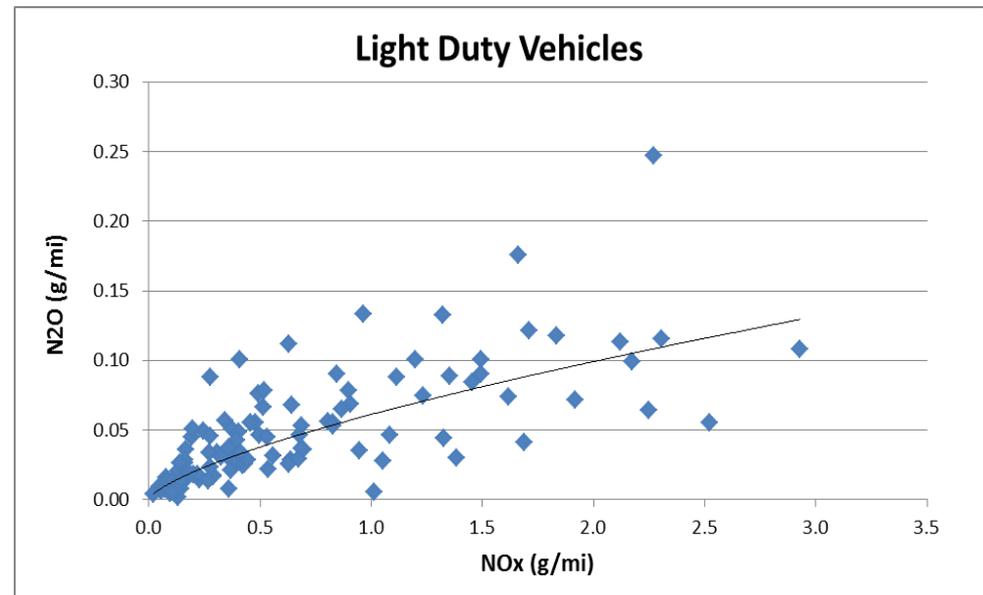
Source: CARB Surveillance Data

HD N_2O calculation approach

- Currently, HD N_2O is calculated assuming 0.332 g/gal diesel.

- EMFAC2017 will estimate HD diesel N_2O using an improved fuel-based emission factor (1.60 g/gal).

- The updated emission factor is derived from the latest available vehicle testing data: "Cross California" campaign by CARB and WVU.

- The update is consistent with UC Berkeley's recent study on Port of Oakland truck emissions data.
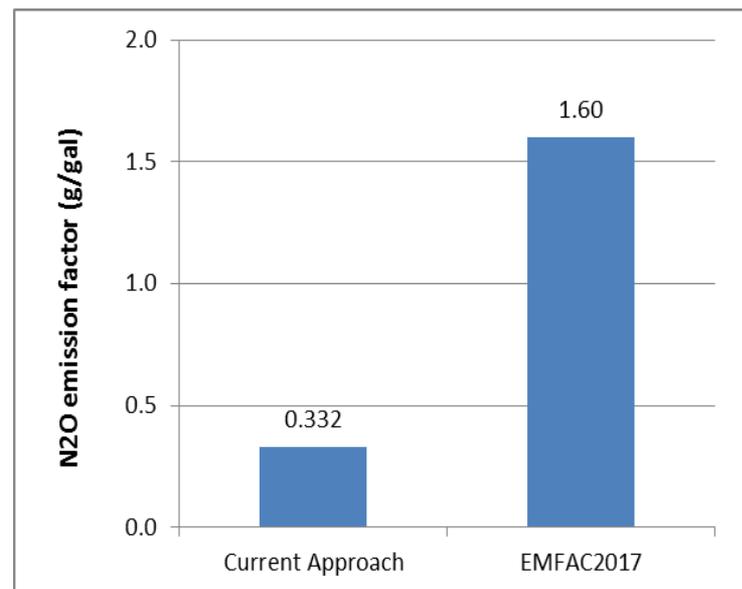
CO_2 equivalent (CO2e)

- GHGs will also be provided in EMFAC2017 in units of CO2e, i.e., CO_2 equivalent.

- Use 100-year time horizon global warming potentials (GWPs) from Intergovernmental Panel on Climate Change's (IPCC) Forth Assessment Report (AR4).

- Consistent with the latest official GHG inventory of CARB.

Annualizing GHG estimates

- Use vehicle category-specific operation days to convert EMFAC's weekday output to annual.

- The GHG module will be able to generate annual emission estimates; e.g., in MMT CO2e per year.

- Annual fuel use estimates in EMFAC2017 match BOE fuel sales.

Summary

- The GHG module is a new addition to EMFAC, with methodology consistent with CARB's official GHG inventory.

- EMFAC2017 will include 3 GHGs from on-road mobile sources: CO_2, CH_4, and N_2O (as well as CO2e).

- EMFAC2017 will use a new method for calculating CO_2 from complete combustion of fuel.

- N_2O estimation will be substantially improved using new testing data for LDVs and HD vehicles.

- The overall change to CO2e in EMFAC from the new methodology is a ~5% increase, mainly driven by CO_2.

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Forecasting

Outline

- Introduction

- Modeling approach and data sources

- Historical and projected input data

- Overview of modeling results

- Summary and next steps

Introduction

- The project objective is to develop methodologies to forecast default <u>VMT</u> and <u>vehicle population</u> through 2050 for EMFAC.

- Use statewide historical socioeconomic data with regression analysis to develop California-specific econometric models.

- Apply the statistical models, along with projected input data, to forecast future statewide VMT, diesel consumption, and new sales of light-duty vehicles.

- EMFAC default VMT does not reflect the impact of SB 375.

- For air quality and climate change planning, CARB uses MPOs' data.

Statistical modeling approach

- Econometric approach

- Ordinary Least Squares (OLS)

- Linear functional forms

- Historical time series data through 2015
  - Historical data to be updated soon to include 2016

Statistical modeling approach (Cont'd)

- Selection of variables: consistent with economic theory
  - Reasonableness of coefficient magnitudes and signs
  - Significance criteria: t-statistic
  - R-squared and goodness of fit

- Consistent with published literature:
  - Lin and Zeng, 2013;
  - Lin and Prince, 2013;
  - Hughes, Knittel, and Sperling, 2008.

Data sources

- Data mostly from public agencies/entities
  - Department of Finance (DOF)
  - Board of Equalization (BOE)
  - Department of Motor Vehicles (DMV)
  - California Energy Commission (CEC)
  - U.S. Energy Information Administration (EIA)
  - U.S. Bureau of Economic Analysis (BEA)
  - UCLA Anderson Forecast

Historical & Projected Input Data

- Historical: 1995-2015
- Projected: 2016-2050

Preliminary regression models for EMFAC2017

- New LDV sales growth
  f (*Unemployment rate, Population, Housing starts*)

- LDV VMT growth
  f (*Unemployment rate, Population, Housing starts, Gas price*)

- HD VMT growth
  f (*Unemployment rate, Disposable income*)

Human population
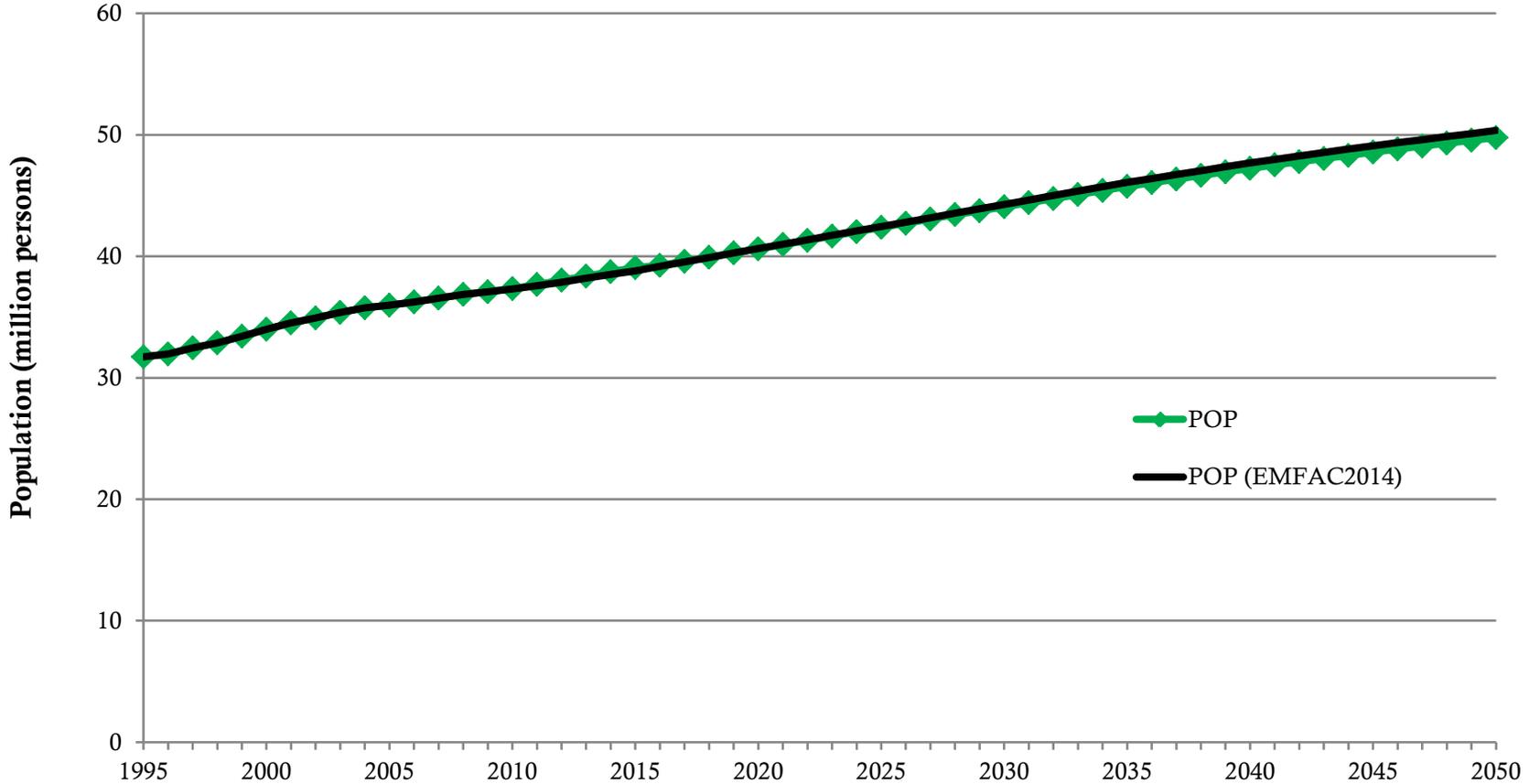
Human population:
DOF (1995-2015), DOF (2016-2050)

Human population (EMFAC2014):
DOF (1995-2013), DOF (2014-2050)

Consumer price index (CPI)
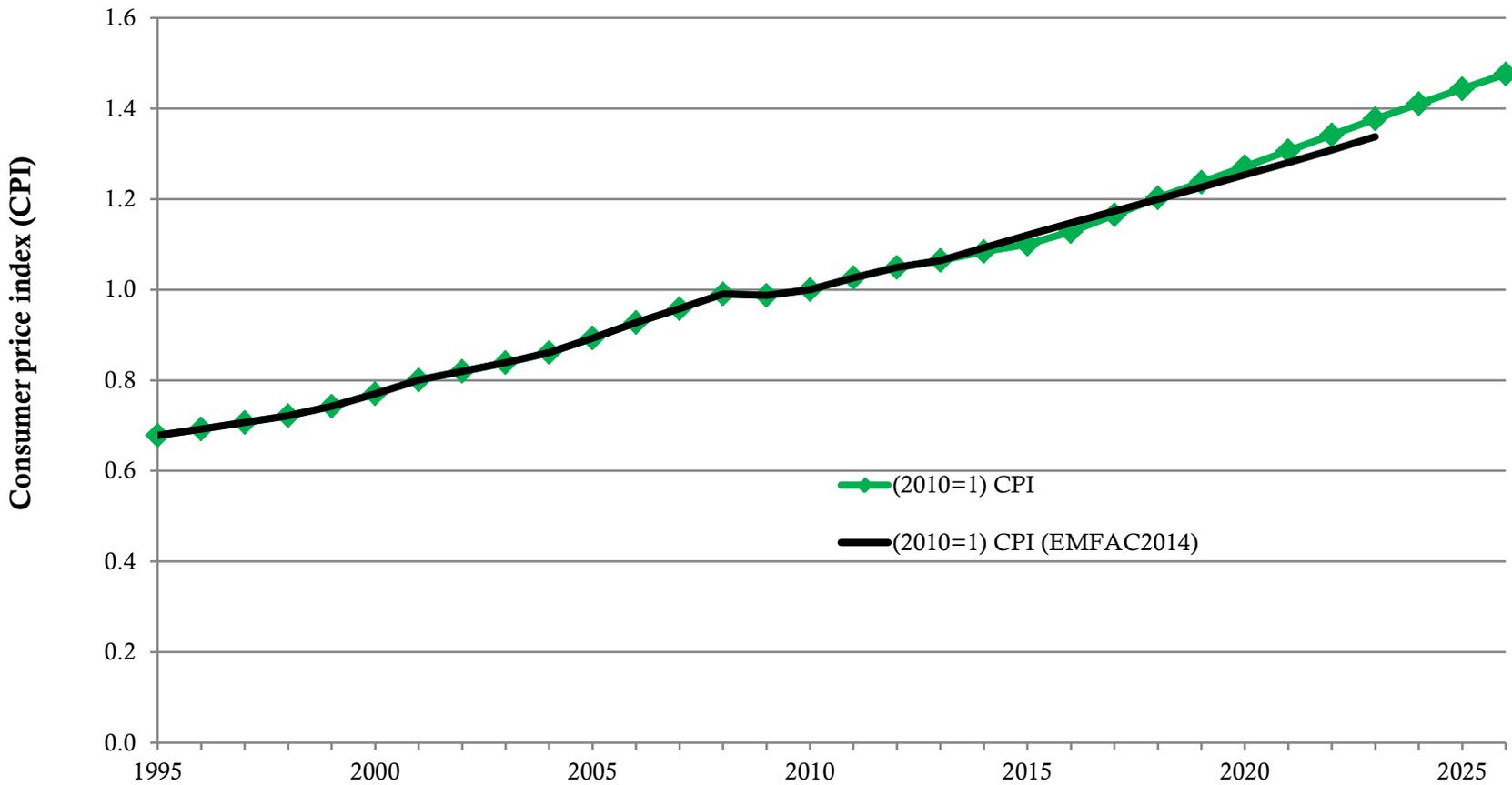
CPI: DOF (1995-2015), UCLA (2016-2026)

CPI: DOF (1995-2013), UCLA (2014-2023)

Disposable personal income
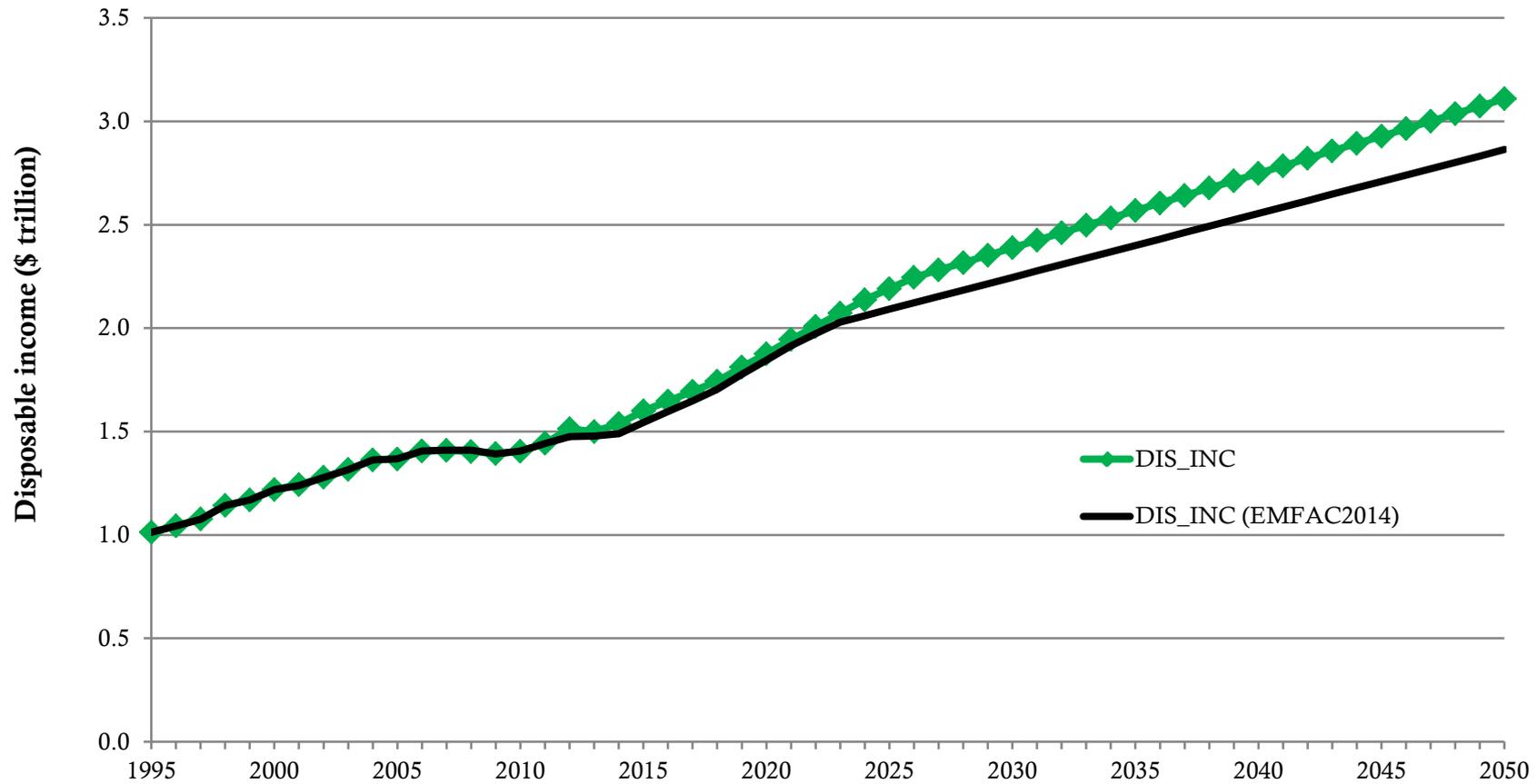
Disposable Income:
BEA (1995-2015), UCLA (2016-2026)
Linear Extrapolation of 1995-2026 for 2027+

Disposable Income (EMFAC2014):
BEA (1995-2013), UCLA (2014-2023)
Linear Extrapolation of 1995-2023 for 2024+

Gasoline price
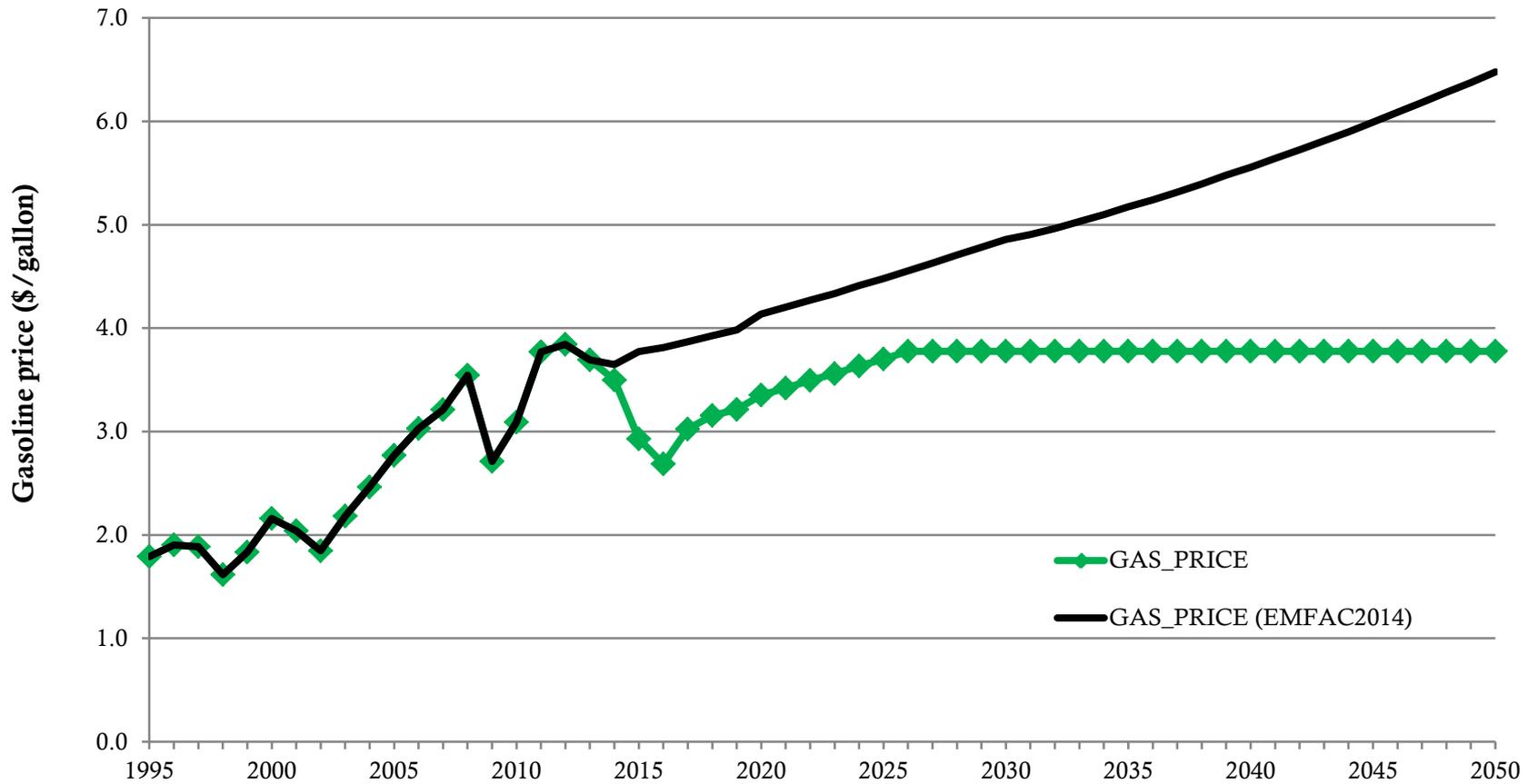
GAS PRICE:
CEC (1995-2012), EIA (2013-2015), CEC (2016-2026)
Remain at the 2026 level for 2027+

GAS PRICE (EMFAC2014):
CEC (1995-2012), EIA (2013), CEC (2014-2050)

Additional Documentation Attachment to Comment Letter 1-F2
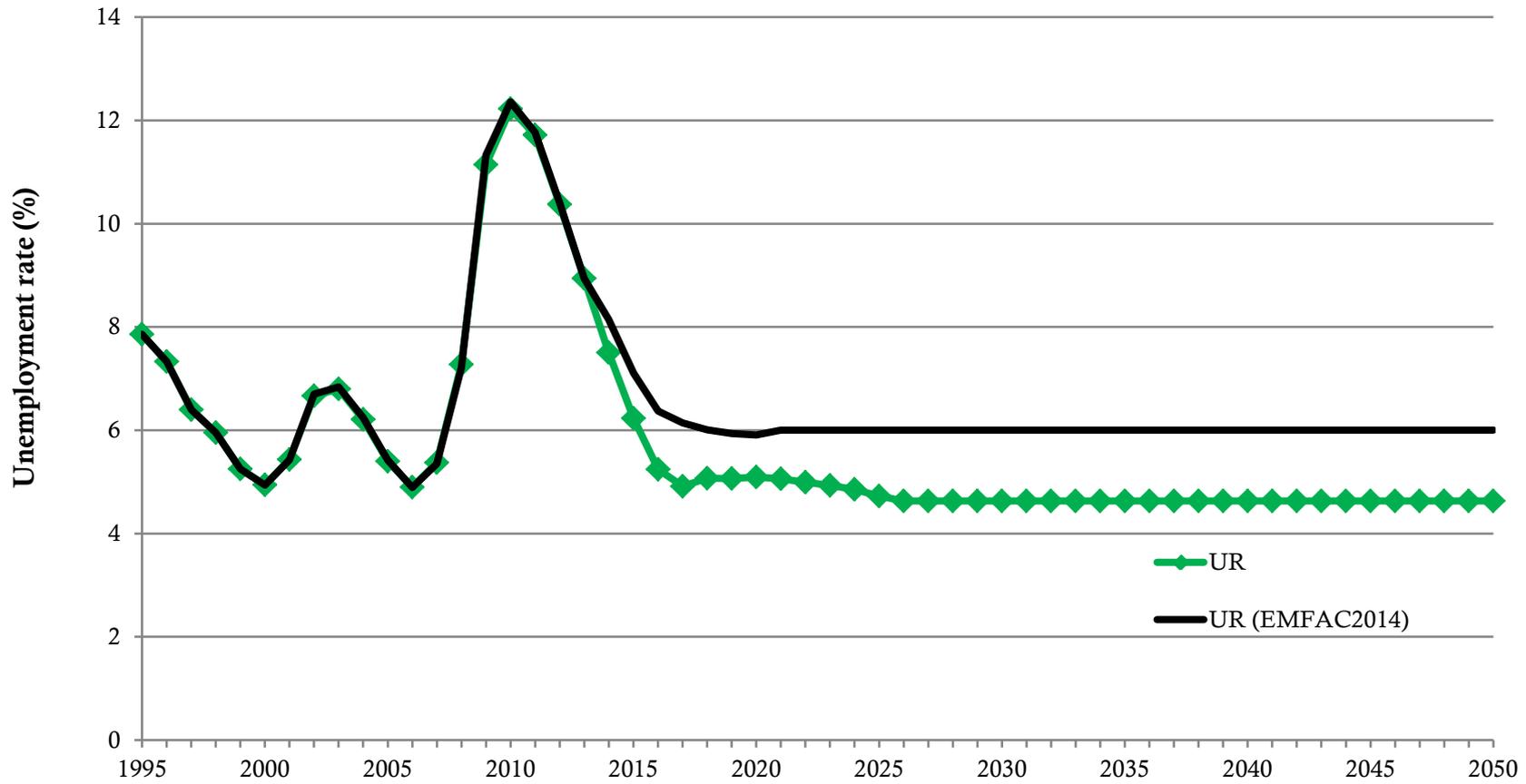
Unemployment rate

Unemployment Rate:
DOF (1995-2015), UCLA (2016-2026)
Remain at the 2026 level for 2027+

Unemployment Rate (EMFAC2014):
DOF (1995-2013), UCLA (2014-2020)
Remain constant for 2021+

Housing starts
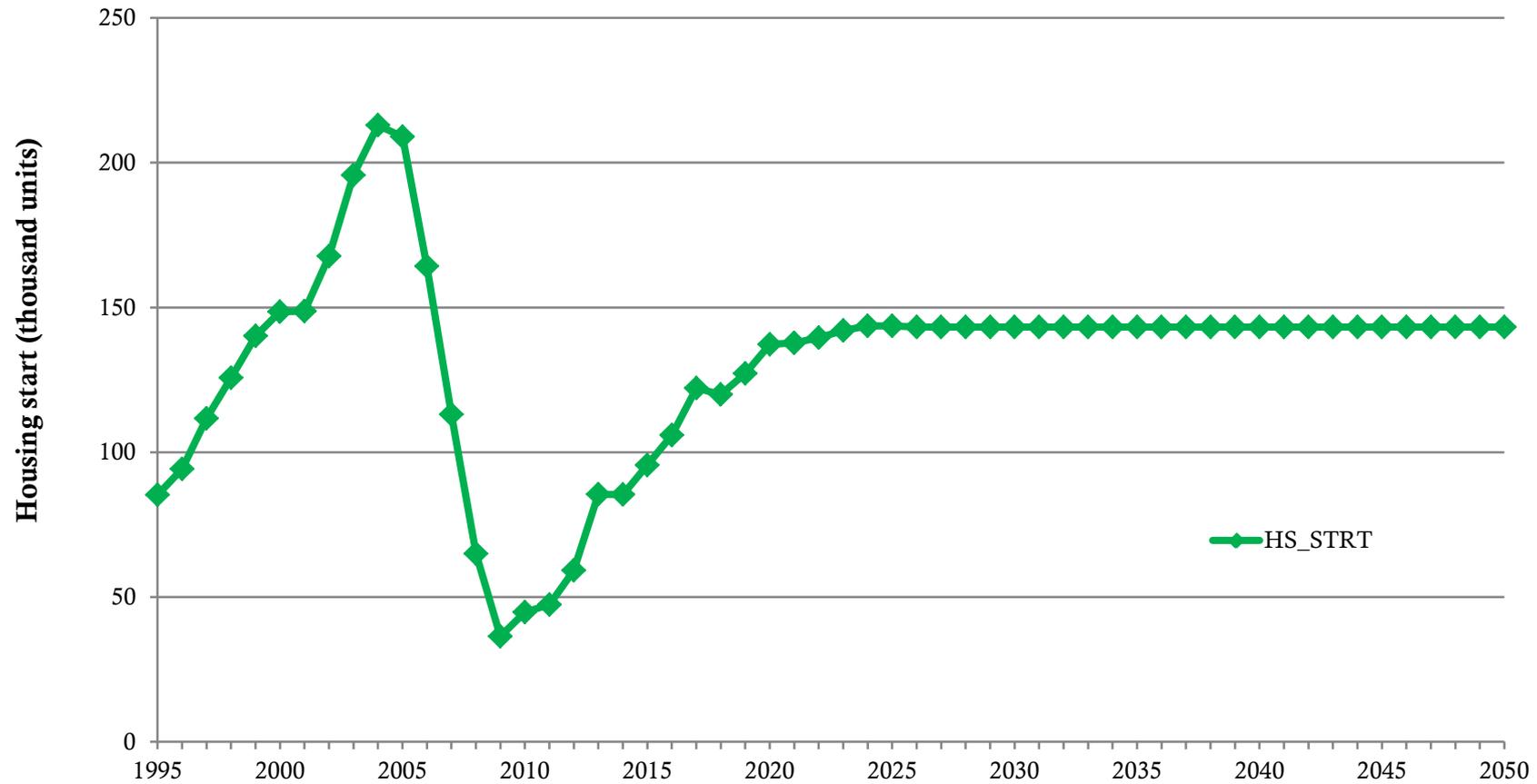
Housing starts:
DOF (1995-2015), UCLA (2016-2026). Assume the national level growth ratio r.t. 2015 applies to CA). Remain at the 2026 level for 2027+

LDV VMT growth rates

2000-2015: BOE fuel match
2016-2021: VMT growth from regression
2022+: VMT growth follows human pop trend
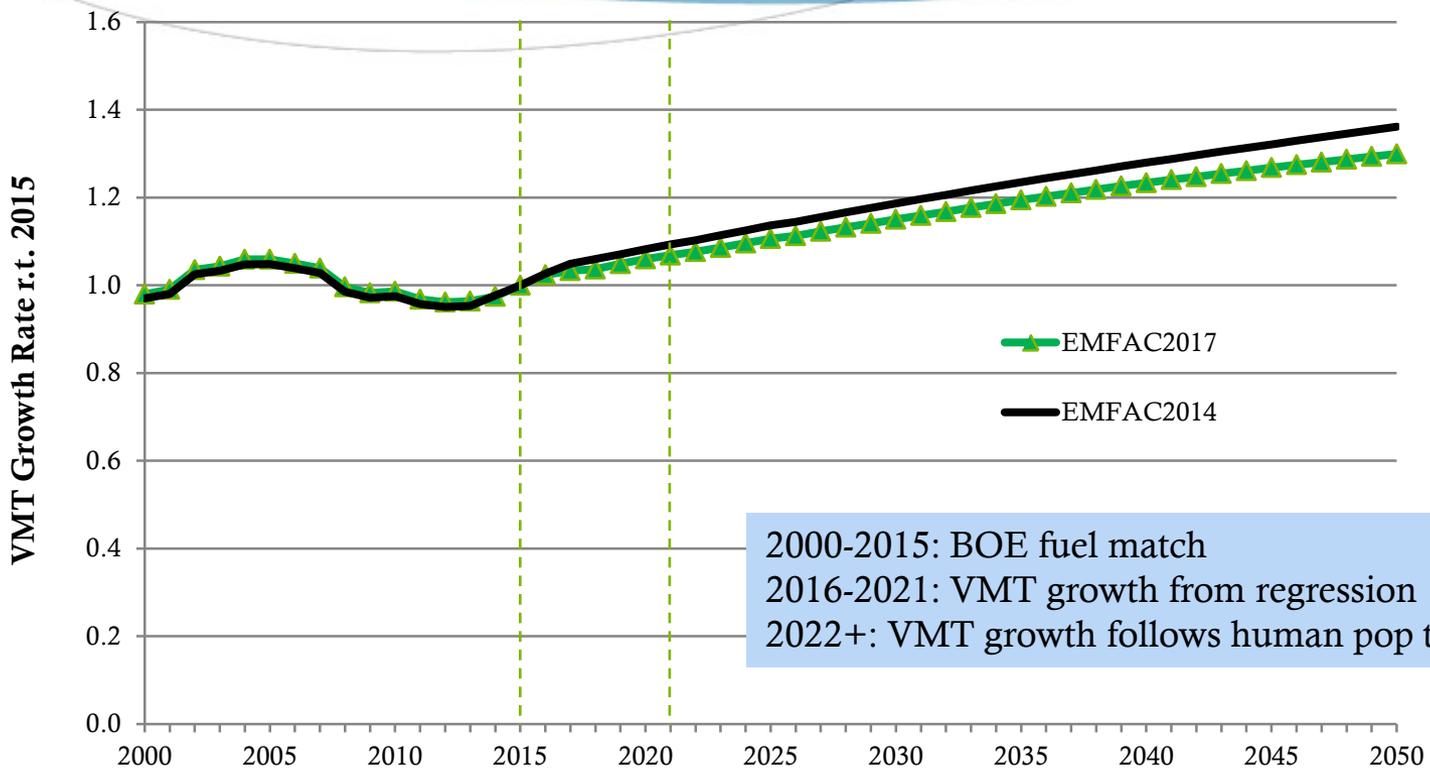
LDV VMT for EMFAC2017 = f(Unemployment rate, Population, Housing start, Gas price)
LDV VMT for EMFAC2014 = f(Disposable income, Nonfarm jobs, Gas price)

LDV new sales growth rates
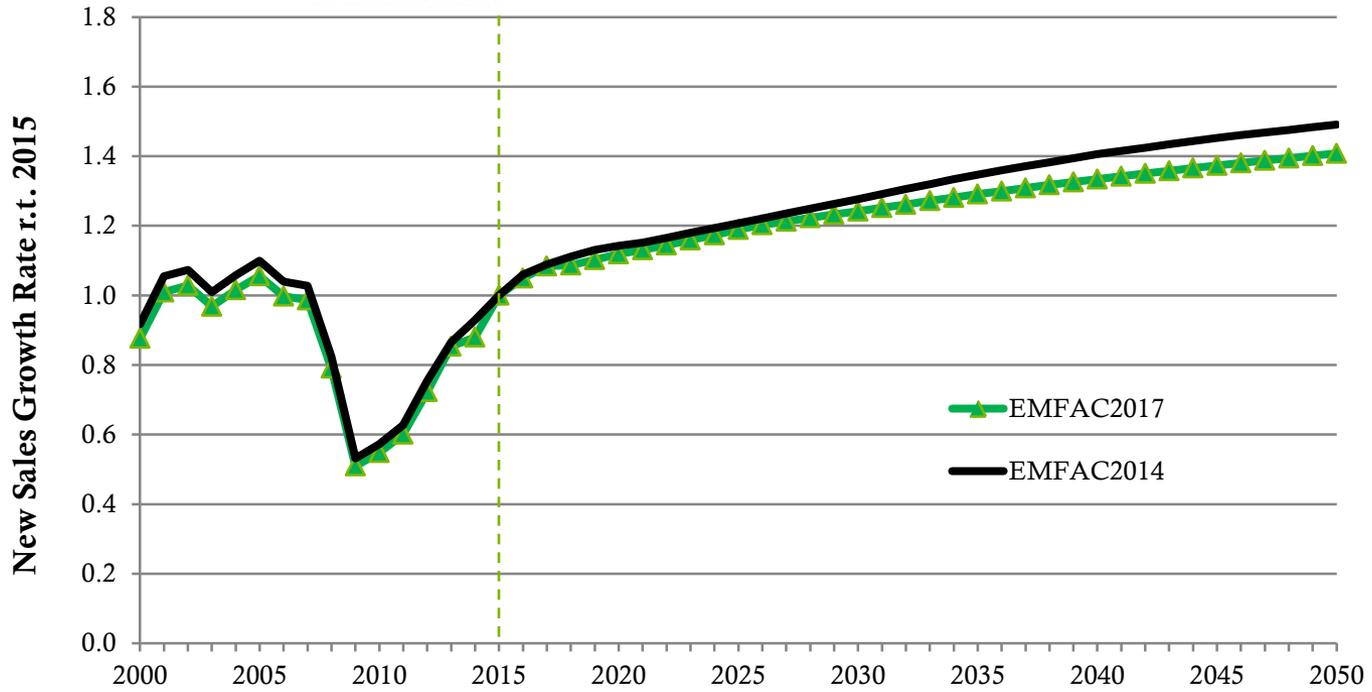
New LDV sales for EMFAC2017 = f(Unemployment rate, Population, Housing start)
New LDV sales for EMFAC2014 = f(Unemployment rate, Population, Gas price)

HD VMT growth rates
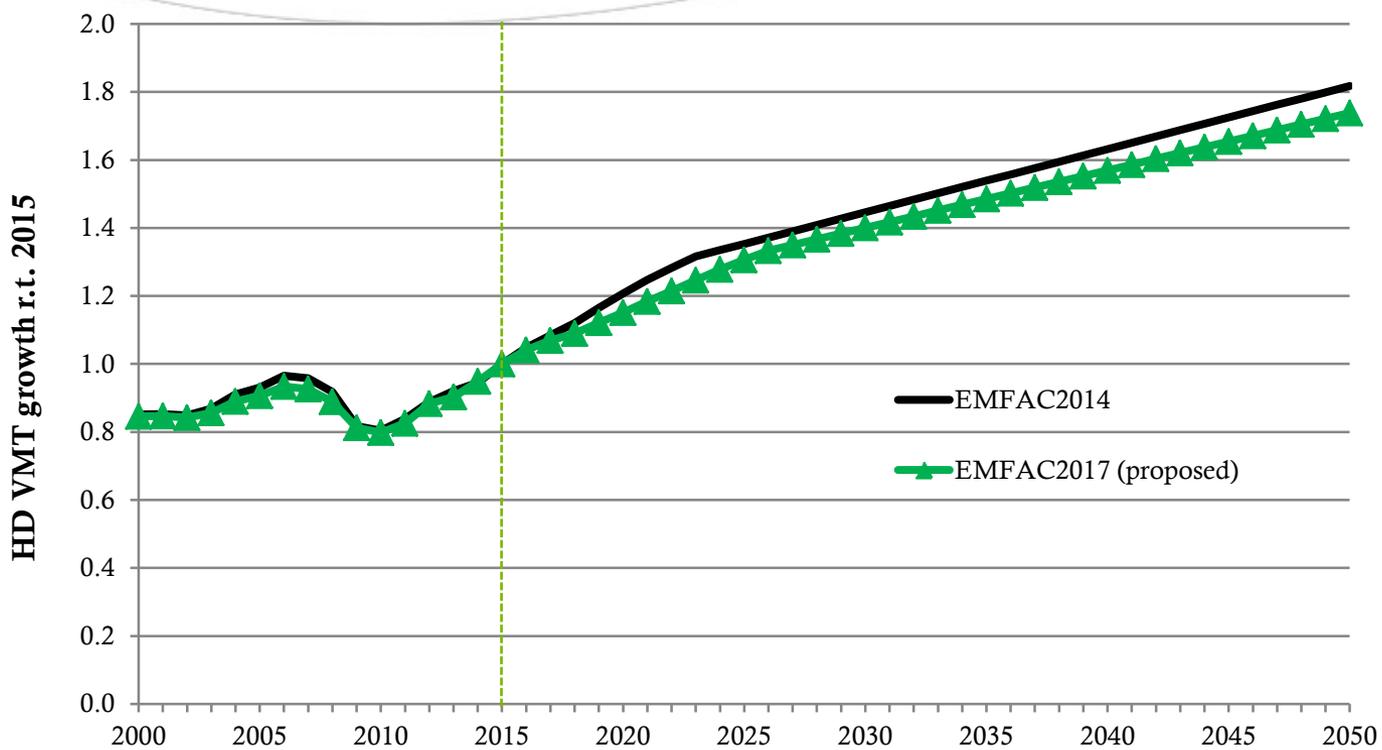
HD VMT for EMFAC2017 = f(Unemployment rate, Disposable income)
HD VMT for EMFAC2014 = f(Unemployment rate, Disposable income)

Vocation-specific HD VMT growth rates for EMFAC2017
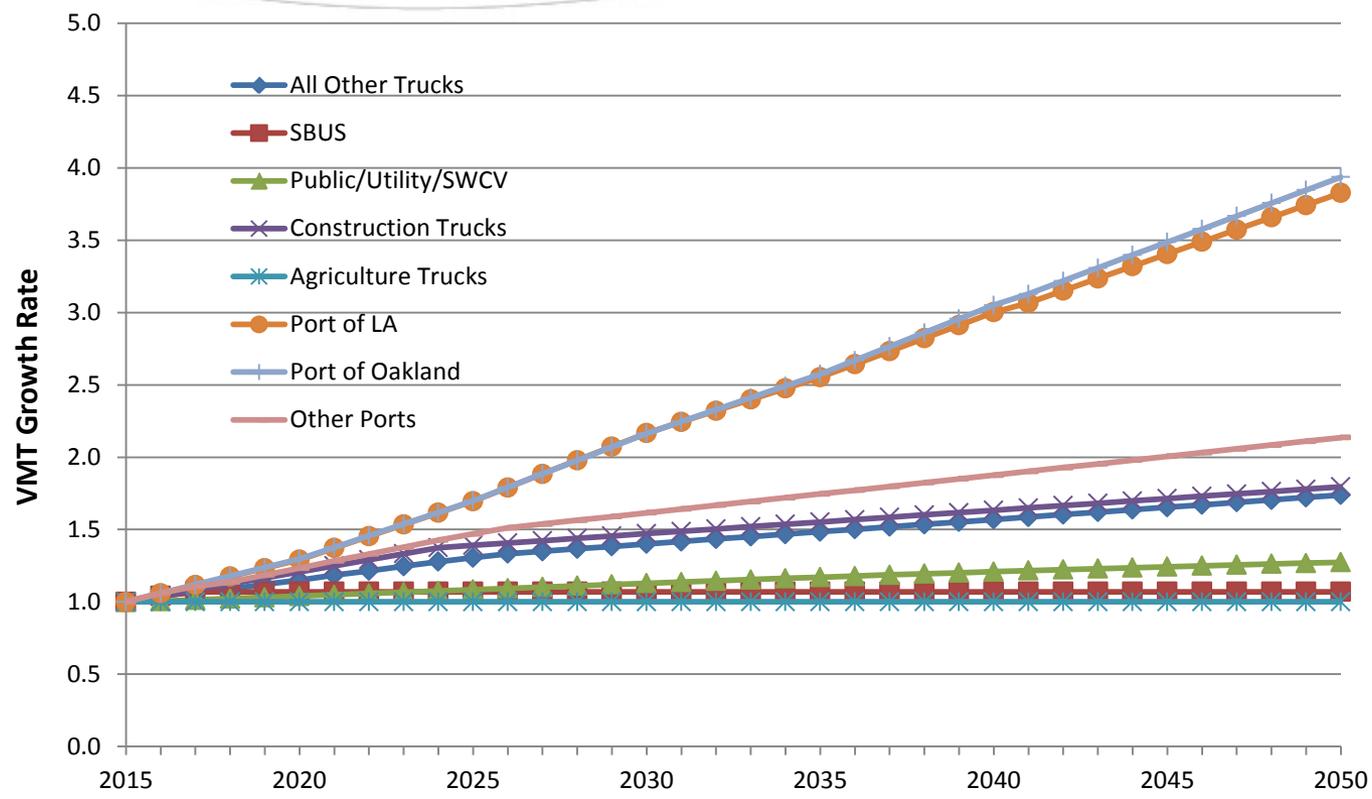
HD new sales growth

- Same methodology as in EMFAC2014
- New sales growth for HD using AEO new sales data
- Vocation-specific growth rates for HD new sales (and VMT)

$$California\ New\ Sales\ growth\ rate\ =$$

$$AEO\ New\ Sales\ Growth\ Rate \times \frac{California\ VMT\ Growth\ Rate}{AEO\ Nationl\ VMT\ Growth\ rate}$$

Summary

- Multivariate regression analysis for vehicle activity forecasting.
  - Similar to the EMFAC2014 methodology
- The regression equations are based on historical data, so the forecasts are for business-as-usual (BAU) future conditions.
  - Default scenario of EMFAC2017
- LDV VMT growth follows the regression trend (short-term) and the human population growth trend (long-term).
- LDV new sales growth follows the regression trend.
- HD VMT and new sales growth trends are vocation-specific.

Next steps

- Include the latest available historical data: 2016 data become available

- Reflect the most recent economic forecast trends: 2016 forecasts

- Develop the best statistical models considering new available data

- Ongoing literature review

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Next Steps

Next Steps

- Alpha Testing
  - ❑ An un-completed version of the model will be released to ARB's designated beta testers for beta testing

- Beta Testing
  - ❑ A revised version of the model reflecting feedback from beta testers.

- October Workshop
  - ❑ We'll have another workshop in October to mainly discuss impact of updates on criteria and GHG emission inventories

Preliminary Agenda for October's Workshop

i.   Impact of Updates on PM, NOx, HC, and CO2 Inventories

ii.   Final data updates (heavy duty truck emission rates and deterioration)

iii.   Development of Advanced Transit Module

iv.   Natural Gas Fleet in EMFAC2017

v.   Update EMFAC2017 Assumptions Based on Findings from LEV 3 Midterm Review

vi.   Methodologies to Reflect Impact of Regulations

vii.   Future Plan for EMFAC202x

EMFAC2017 Schedule – Workshops/ Model Release

- Workshops
  - ❖ 1st Workshop (Methodology) – June 1, 2017
  - ❖ 2nd Workshop (Results) – October 2017

- Releases
  - ❖ Alpha Release –Mid-June 2017
  - ❖ Beta Release – August 2017
  - ❖ Public Release – December 2017 (expected)

			2017				2018
May	June	July	August	Sep	Oct	Dec	March

EMFAC Workshop #1

Alpha Release

EMFAC Workshop #2

US EPA Approval

Beta Release

Final Release
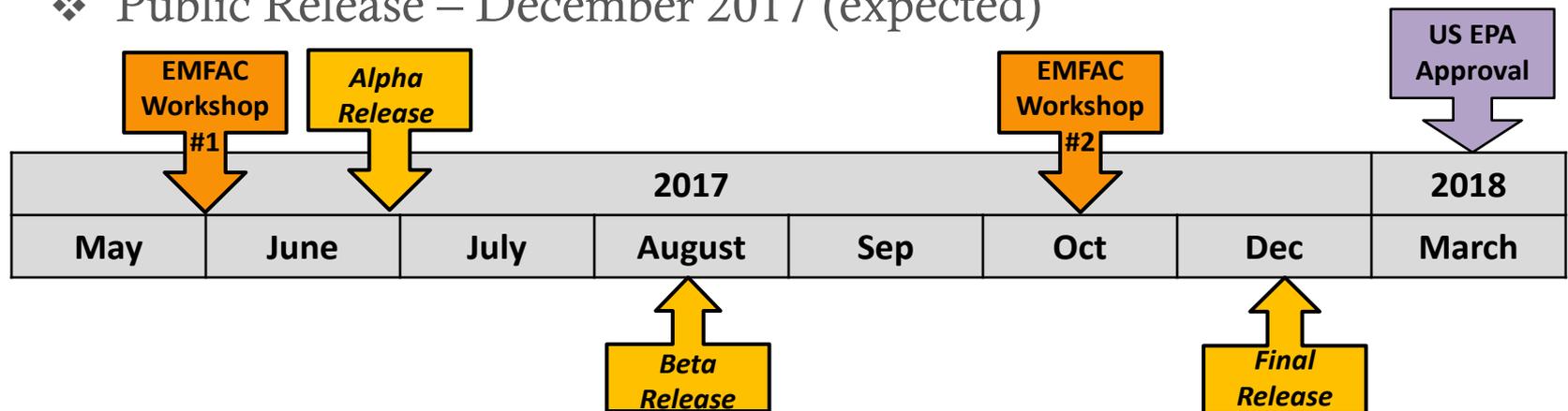
On-going Data Collection

- Collaborating with industry partners to collect representative data for use in light and heavy duty modules of EMFAC

- Expanding vehicle emission testing
  - ❑ Dyno testing of late model cars and trucks
  - ❑ Truck & Bus Surveillance Program
  - ❑ PEMS testing of late model heavy duty trucks
  - ❑ Contracted field studies (real world emissions from heavy duty trucks)
  - ❑ High emitter evaporative emission testing

Questions and Comments

- For questions and comments please contact us at:

EMFAC@arb.ca.gov

- You can also visit our website at:

https://www.arb.ca.gov/msei/msei.htm

Attachment F

**Additional Documentation
Attachment to Comment 1-F5**

ESA

ATTACHMENT 1:

Comparison of Aggregate On-Road Motor Vehicle Emission Factors for the South Coast Portion of Riverside County

Attachment 1.

Comparison of Aggregate On-Road Motor Vehicle Emission Factors for the South Coast Portion of Riverside County.

Pollutant	Vehicle Operating Mode	Aggregate Annual 2025 Emission Factors		Aggregate Annual 2035 Emission Factors	
		EMFAC2017 (grams/mile)	EMFAC2014 (grams/mile)	EMFAC2017 (grams/mile)	EMFAC2014 (grams/mile)
Reactive Organic Gases (ROG)	Running Exhaust	0.0177	0.0206	0.0113	0.0147
Nitrogen Oxides (NOx)	Running Exhaust	0.1811	0.1401	0.1286	0.0790
Carbon Monoxide (CO)	Running Exhaust	0.6670	0.6170	0.4841	0.4115
Inhalable Particulates (PM10)	Running Exhaust	0.0027	0.0020	0.0020	0.0012
	Tire Wear	0.0094	0.0094	0.0094	0.0094
	Brake Wear	0.0415	0.0412	0.0413	0.0408
Fine Particulates (PM2.5)	Running Exhaust	0.0026	0.0019	0.0019	0.0011
	Tire Wear	0.0023	0.0024	0.0024	0.0024
	Brake Wear	0.0178	0.0177	0.0177	0.0175
Sulfur Oxides (SOx)	Running Exhaust	0.0032	0.0033	0.0026	0.0027
Diesel Particulate Matter (DPM)	Running Exhaust	0.0184	0.0072	0.0156	0.0046
Carbon Dixode (CO2)	Running Exhaust	331.6021	336.7324	269.3510	279.4643

Notes:

1. Aggregate EMFAC2017 emission factors were derived from EMFAC2017 (v1.0.2) Emission Rates outputs for the South Coast portion of Riverside County for 2025 (representing completion of Phase 1) and 2035 (representing completion of Phase 2 and full project buildout). Outputs were produced using the California Air Resources Board's EMFAC2017 (v1.0.2) Web Database, available at https://www.arb.ca.gov/ emfac/2017/ (accessed September 4, 2018). Selected options: Data Type - Emission Rates; Region - Riverside (SC) Subarea; Season - Annual; Vehicle Category - EMFAC2007 Categories-All; Model Year - Aggregated; Speed - Aggregated; Fuel - All. Files were downloaded in .CSV (comma separated values) format for import to Microsoft Excel to aggregate emission factor data by vehicle category and fuel based on vehicle mileage.

2. Aggregate EMFAC2014 emission factors were derived from EMFAC2014 (v1.0.7) Emission Rates outputs in a similar fashion as described for EMFAC2017 emission factors, above. Outputs were produced using the CARB EMFAC2014 (v.1.0.7) Web Database, available at https://www.arb.ca.gov/emfac/2014/ (accessed September 4, 2018).

3. To derive Diesel Particulate Matter (DPM) emission factors, PM10 Running Exhaust emission factors were aggregated for diesel fueled vehicles only based on vehicle mileage.

EMFAC2017 (v1.0.2) Emission Rates
Region Type: Sub-Area
Region: Riverside (SC)
Calendar Year: 2025
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HTSK and

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Population
Riverside (SC)	2025	HHDT	Aggregated	Aggregated	GAS	5.917085626
Riverside (SC)	2025	HHDT	Aggregated	Aggregated	DSL	16787.91989
Riverside (SC)	2025	HHDT	Aggregated	Aggregated	NG	366.9607711
Riverside (SC)	2025	LDA	Aggregated	Aggregated	GAS	634445.4088
Riverside (SC)	2025	LDA	Aggregated	Aggregated	DSL	6750.331621
Riverside (SC)	2025	LDA	Aggregated	Aggregated	ELEC	17340.99834
Riverside (SC)	2025	LDT1	Aggregated	Aggregated	GAS	64862.57189
Riverside (SC)	2025	LDT1	Aggregated	Aggregated	DSL	22.09264048
Riverside (SC)	2025	LDT1	Aggregated	Aggregated	ELEC	840.0670631
Riverside (SC)	2025	LDT2	Aggregated	Aggregated	GAS	196401.0012
Riverside (SC)	2025	LDT2	Aggregated	Aggregated	DSL	1411.82251
Riverside (SC)	2025	LDT2	Aggregated	Aggregated	ELEC	3434.450512
Riverside (SC)	2025	LHDT1	Aggregated	Aggregated	GAS	14855.10977
Riverside (SC)	2025	LHDT1	Aggregated	Aggregated	DSL	15929.66362
Riverside (SC)	2025	LHDT2	Aggregated	Aggregated	GAS	2257.609118
Riverside (SC)	2025	LHDT2	Aggregated	Aggregated	DSL	6279.413605
Riverside (SC)	2025	MCY	Aggregated	Aggregated	GAS	29089.61205
Riverside (SC)	2025	MDV	Aggregated	Aggregated	GAS	154545.0839
Riverside (SC)	2025	MDV	Aggregated	Aggregated	DSL	3932.245175
Riverside (SC)	2025	MDV	Aggregated	Aggregated	ELEC	2250.064657
Riverside (SC)	2025	MH	Aggregated	Aggregated	GAS	4266.702301
Riverside (SC)	2025	MH	Aggregated	Aggregated	DSL	1959.172346
Riverside (SC)	2025	MHDT	Aggregated	Aggregated	GAS	1438.72636
Riverside (SC)	2025	MHDT	Aggregated	Aggregated	DSL	12401.54695
Riverside (SC)	2025	OBUS	Aggregated	Aggregated	GAS	435.7273524
Riverside (SC)	2025	OBUS	Aggregated	Aggregated	DSL	238.3575855
Riverside (SC)	2025	SBUS	Aggregated	Aggregated	GAS	450.3676781
Riverside (SC)	2025	SBUS	Aggregated	Aggregated	DSL	916.0655598
Riverside (SC)	2025	UBUS	Aggregated	Aggregated	GAS	167.3661527
Riverside (SC)	2025	UBUS	Aggregated	Aggregated	DSL	0.141961099
Riverside (SC)	2025	UBUS	Aggregated	Aggregated	ELEC	0.058469431
Riverside (SC)	2025	UBUS	Aggregated	Aggregated	NG	208.7163855
Riverside (SC)	2035	Aggregated	Aggregated	Aggregated	Agg	
Riverside (SC)	2035	Aggregated	Aggregated	Aggregated	DSL	

X, HTSK and RUNLS, g/vehicle/day for IDLEX, RESTL and DIURN

VMT	Trips	ROG_RUNEX	ROG_IDLEX	ROG_STREX	ROG_HOTSOAK
489.3585501	118.3890492	0.3359628	0	0.001499214	0.110504271
2073941.582	177897.7482	0.017387967	4.613241217	0	0
14928.54824	1431.147007	0.140936561	0.033385466	0	0
24819468.5	2999831.308	0.005490885	0	0.167011827	0.080992061
273894.7973	32236.019	0.008824337	0	0	0
715536.0137	86549.86824	0	0	0	0.004888026
2387662.891	297460.563	0.018755865	0	0.295945624	0.191726207
500.8045087	74.57591289	0.14933365	0	0	0
35870.85658	4237.919514	0	0	0	0.004888026
7476968.972	920583.0346	0.01012142	0	0.245389702	0.110827506
60038.76398	6916.520273	0.012199505	0	0	0
100004.4721	17256.03431	0	0	0	0.004888026
474380.1042	221319.0015	0.018516269	0.412891886	0.110600814	0.121128572
511419.863	200375.1288	0.071789278	0.109759705	0	0
71801.06903	33635.01202	0.010552342	0.411170728	0.102611938	0.103361362
200055.2549	78987.12365	0.062514062	0.109759705	0	0
176339.2601	58179.22411	2.09159562	0	1.817336305	0.782062572
5434458.472	708075.5859	0.013500754	0	0.325074208	0.146435308
155115.8465	18927.02863	0.00839997	0	0	0
66744.92315	11374.61152	0	0	0	0.004888026
32841.07891	426.8408982	0.035578793	0	0.12380774	0.080995856
14490.48271	195.9172346	0.068124237	0	0	0
58388.27343	28786.037	0.026085636	1.009868647	0.179770619	0.068604789
763294.7123	124114.8543	0.007342166	0.063884902	0	0
14480.56576	8718.032866	0.042197117	0.745218535	0.151776124	0.032947972
16706.49314	2277.720008	0.010414522	0.784924781	0	0
15279.04245	1801.470712	0.040048567	10.64151815	0.327979725	0.088475695
29066.07334	10571.26955	0.110501877	0.26514534	0	0
23564.28502	669.4646108	0.010603587	0	0.221790005	0.03419833
11.67769301	0.567844395	0.000535209	0	0	0
1.251702935	0.233877724	0	0	0	0
27379.0524	834.865542	0.080909335	0	0	0
46045123.35		0.017741659			
4098536.351					

ROG_RUNLOSS	ROG_RESTLOSS	ROG_DIURN	TOG_RUNEX	TOG_IDLEX	TOG_STREX
0.50965202	0.037085039	0.060093787	0.490236128	0	0.00164145
0	0	0	0.019794877	5.25182396	0
0	0	0	4.481302954	1.252464367	0
0.190470615	0.17668152	0.215869853	0.008012287	0	0.182856928
0	0	0	0.010045921	0	0
0	0.00943641	0.028301668	0	0	0
0.636664928	0.453305455	0.626235047	0.027368514	0	0.324023207
0	0	0	0.170006432	0	0
0	0.00943641	0.028301668	0	0	0
0.378523762	0.318472854	0.368772897	0.014769152	0	0.268670836
0	0	0	0.013888326	0	0
0	0.00943641	0.028301668	0	0	0
0.77993358	0.03323602	0.061821438	0.027018897	0.602490871	0.12109397
0	0	0	0.08172732	0.124954127	0
0.576391237	0.028730783	0.050765668	0.015397952	0.599979361	0.112347156
0	0	0	0.071168104	0.124954127	0
1.65908321	1.514593612	2.879023229	2.596338483	0	1.978232889
0.451163759	0.428555893	0.472712282	0.019696643	0	0.355914999
0	0	0	0.009562808	0	0
0	0.00943641	0.028301668	0	0	0
1.677853456	0.051062934	0.131321208	0.051916491	0	0.135553892
0	0	0	0.077554914	0	0
0.337743932	0.021400134	0.037906238	0.038064099	1.473597959	0.1968262
0	0	0	0.008358497	0.072728098	0
0.367695258	0.029236466	0.065534531	0.061573934	1.087421137	0.166175752
0	0	0	0.01185614	0.893577113	0
0.535415599	0.024489967	0.048427204	0.058438776	15.5280783	0.359096516
0	0	0	0.125797975	0.301847787	0
0.174937682	0.009464103	0.015510571	0.01547273	0	0.242832138
0	0	0	0.038229192	0	0
0	0	0	0	0	0
0	0	0	5.779238231	0	0
			0.028200213		

TOG_HOTSOAK	TOG_RUNLOSS	TOG_RESTLOSS	TOG_DIURN	CO_RUNEX	CO_IDLEX
0.110504271	0.50965202	0.037085039	0.060093787	25.13078024	0
0	0	0	0	0.15090213	67.8211908
0	0	0	0	14.30619372	21.84687983
0.080992061	0.190470615	0.17668152	0.215869853	0.518584089	0
0	0	0	0	0.158334389	0
0.004888026	0	0.00943641	0.028301668	0	0
0.191726207	0.636664928	0.453305455	0.626235047	1.001815824	0
0	0	0	0	0.932264491	0
0.004888026	0	0.00943641	0.028301668	0	0
0.110827506	0.378523762	0.318472854	0.368772897	0.706546533	0
0	0	0	0	0.11077608	0
0.004888026	0	0.00943641	0.028301668	0	0
0.121128572	0.77993358	0.03323602	0.061821438	0.518392968	3.761130761
0	0	0	0	0.471398268	0.909745076
0.103361362	0.576391237	0.028730783	0.050765668	0.29309399	3.770564255
0	0	0	0	0.404748748	0.909745076
0.782062572	1.65908321	1.514593612	2.879023229	18.29916334	0
0.146435308	0.451163759	0.428555893	0.472712282	0.804698607	0
0	0	0	0	0.16565094	0
0.004888026	0	0.00943641	0.028301668	0	0
0.080995856	1.677853456	0.051062934	0.131321208	1.030934853	0
0	0	0	0	0.317830044	0
0.068604789	0.337743932	0.021400134	0.037906238	0.685436858	14.43650206
0	0	0	0	0.054883022	2.34753793
0.032947972	0.367695258	0.029236466	0.065534531	1.097907821	5.768300824
0	0	0	0	0.086090622	12.70438364
0.088475695	0.535415599	0.024489967	0.048427204	0.905363122	82.24087757
0	0	0	0	0.318716662	6.43661887
0.03419833	0.174937682	0.009464103	0.015510571	0.214154059	0
0	0	0	0	0.057172756	0
0	0	0	0	0	0
0	0	0	0	43.76158961	0
				0.667036998	

CO_STREX	NOx_RUNEX	NOx_IDLEX	NOx_STREX	CO2_RUNEX	CO2_IDLEX	CO2_STREX
5.468566411	3.386183663	0	0.113293785	1859.068895	0	46.06539707
0	1.947821562	55.65074882	2.511240927	1220.386579	10932.68307	0
0	1.207892251	19.73040555	0	3059.937465	3592.027107	0
1.953005868	0.025937555	0	0.152866177	240.1096538	0	50.30197489
0	0.039460201	0	0	180.8476117	0	0
0	0	0	0	0	0	0
2.120806821	0.080036352	0	0.224259489	281.476261	0	59.91051375
0	0.861881958	0	0	372.8764631	0	0
0	0	0	0	0	0	0
2.459241373	0.051520429	0	0.219961104	291.960893	0	63.11599525
0	0.034017297	0	0	238.1716277	0	0
0	0	0	0	0	0	0
1.609345788	0.152531263	0.036018299	0.496957507	752.1983655	118.4068454	18.45289293
0	2.019895045	2.022562002	0	461.8679033	132.6011947	0
1.520365092	0.131369083	0.035835042	0.492955781	860.4473653	136.2198426	20.88791884
0	1.626437918	2.022626013	0	503.8737569	213.427833	0
8.680785122	1.119383515	0	0.26305578	207.4293794	0	59.79585402
2.80678359	0.068286585	0	0.284423528	369.5944041	0	80.35868142
0	0.036746435	0	0	325.3993277	0	0
0	0	0	0	0	0	0
2.657870334	0.312793224	0	0.346393086	1602.717016	0	25.25945019
0	4.017638479	0	0	912.9869246	0	0
3.832319002	0.232717361	0.089745115	0.342077215	1517.43699	518.8695079	36.10206309
0	0.951709773	4.457611471	2.147585163	834.6715024	729.9041967	0
3.175956174	0.367231937	0.064991088	0.313195548	1555.060029	367.8743931	25.6713968
0	1.322419923	11.12427013	2.205657442	1039.963755	2397.257198	0
7.300562365	0.354992113	0.9265304	0.608145921	876.0940342	2614.16713	46.99795254
0	6.027764064	41.50901721	0.949897146	1176.739192	3617.805225	0
4.248732329	0.148619548	0	0.491986202	1336.205443	0	50.46145954
0	0.477528271	0	0	1093.673357	0	0
0	0	0	0	0	0	0
0	0.442623237	0	0	1856.440922	0	0
	0.181110675			331.6020861		

CH4_RUNEX	CH4_IDLEX	CH4_STREX	PM10_RUNEX	PM10_IDLEX	PM10_STREX
0.072477006	0	0.000292767	0.000969778	0	0.000579929
0.000807626	0.214273106	0	0.024457296	0.023600677	0
4.302249368	1.209233351	0	0.004068207	0.021508076	0
0.00156859	0	0.04010316	0.001192839	0	0.00168683
0.000409874	0	0	0.004192056	0	0
0	0	0	0	0	0
0.004404957	0	0.061134608	0.001619863	0	0.002247278
0.006936263	0	0	0.115106486	0	0
0	0	0	0	0	0
0.002635444	0	0.055462755	0.001236279	0	0.001716795
0.000566644	0	0	0.004217619	0	0
0	0	0	0	0	0
0.00402855	0.117029361	0.022409645	0.001012825	0	0.000378571
0.003334475	0.005098128	0	0.016650376	0.02715725	0
0.002565587	0.117632977	0.021172439	0.000900229	0	0.000315443
0.002903659	0.005098128	0	0.016921988	0.027341137	0
0.311277616	0	0.239935839	0.001872313	0	0.002698308
0.003411775	0	0.068798739	0.001245313	0	0.001768748
0.000390163	0	0	0.003661218	0	0
0	0	0	0	0	0
0.008758762	0	0.031786251	0.001033661	0	0.000303775
0.003164241	0	0	0.12550974	0	0
0.005605461	0.264956918	0.034397541	0.000922024	0	0.000417782
0.000341025	0.002967288	0	0.010204085	0.003892617	0
0.008714095	0.194201683	0.028564837	0.000840776	0	0.000279506
0.000483728	0.036457723	0	0.01563209	0.003749566	0
0.008075466	2.365005854	0.05595214	0.00081236	0	0.00035295
0.005132526	0.012315314	0	0.034728562	0.037755138	0
0.003566981	0	0.057024082	0.001329535	0	0.000570853
0.037458544	0	0	0.004268714	0	0
0	0	0	0	0	0
5.662736779	0	0	0.003033859	0	0
0.008026196			0.002740278		

PM10_PMTW	PM10_PMBW	PM2_5_RUNEX	PM2_5_IDLEX	PM2_5_STREX	PM2_5_PMTW
0.020000006	0.061740018	0.000891675	0	0.000533223	0.005000001
0.035207565	0.060380974	0.023399284	0.022579722	0	0.008801891
0.03600001	0.061740018	0.003892218	0.020577646	0	0.009000003
0.008000002	0.036750011	0.001096772	0	0.001550978	0.002000001
0.008000002	0.036750011	0.004010709	0	0	0.002000001
0.008000002	0.036750011	0	0	0	0.002000001
0.008000002	0.036750011	0.001489405	0	0.002066289	0.002000001
0.008000002	0.036750011	0.11012703	0	0	0.002000001
0.008000002	0.036750011	0	0	0	0.002000001
0.008000002	0.036750011	0.001136712	0	0.00157853	0.002000001
0.008000002	0.036750011	0.004035167	0	0	0.002000001
0.008000002	0.036750011	0	0	0	0.002000001
0.008000002	0.076440022	0.000931255	0	0.000348083	0.002000001
0.012000003	0.076440022	0.015930088	0.02598244	0	0.003000001
0.008000002	0.089180026	0.000827727	0	0.000290038	0.002000001
0.012000003	0.089180026	0.01618995	0.026158371	0	0.003000001
0.004000001	0.011760003	0.001748522	0	0.002532061	0.001
0.008000002	0.036750011	0.001145026	0	0.001626311	0.002000001
0.008000002	0.036750011	0.003502835	0	0	0.002000001
0.008000002	0.036750011	0	0	0	0.002000001
0.012000003	0.130340037	0.000950413	0	0.00027931	0.003000001
0.016000005	0.130340037	0.120080244	0	0	0.004000001
0.012000003	0.130340037	0.000847767	0	0.000384135	0.003000001
0.012000003	0.130340037	0.009762661	0.003724224	0	0.003000001
0.012000003	0.130340037	0.000773063	0	0.000256996	0.003000001
0.012000003	0.130340037	0.014955852	0.003587362	0	0.003000001
0.008000002	0.744800204	0.000746935	0	0.000324524	0.002000001
0.012000003	0.744800213	0.033226219	0.036121867	0	0.003000001
0.009546243	0.105090841	0.001222458	0	0.000524879	0.002386561
0.012000007	0.130340079	0.004084051	0	0	0.003000002
0.012000007	0.130340079	0	0	0	0.003000002
0.029427887	0.080525388	0.002902615	0	0	0.007356972
0.009376685	0.041459006	0.002580952			0.002344171

PM2_5_PMBW	SOx_RUNEX	SOx_IDLEX	SOx_STREX	N2O_RUNEX	N2O_IDLEX
0.026460008	0.018396994	0	0.000455854	0.133718336	0
0.02587756	0.011529607	0.103286569	0	0.191827775	1.718465532
0.026460008	0	0	0	0.62378827	0.732258224
0.015750005	0.00237608	0	0.000497779	0.003557657	0
0.015750005	0.00170966	0	0	0.028426726	0
0.015750005	0	0	0	0	0
0.015750005	0.002785436	0	0.000592863	0.006645347	0
0.015750005	0.003525024	0	0	0.058610987	0
0.015750005	0	0	0	0	0
0.015750005	0.00288919	0	0.000624584	0.004935364	0
0.015750005	0.002251578	0	0	0.037437263	0
0.015750005	0	0	0	0	0
0.032760009	0.007443613	0.001171732	0.000182606	0.009566676	0.003048852
0.032760009	0.004366313	0.001253558	0	0.072599203	0.020843061
0.038220011	0.008514824	0.001348006	0.000206703	0.009159471	0.003030928
0.038220011	0.004763419	0.002017661	0	0.079201938	0.033547883
0.005040001	0.002052682	0	0.000591728	0.064744013	0
0.015750005	0.003657436	0	0.000795214	0.006151447	0
0.015750005	0.003076194	0	0	0.051148243	0
0.015750005	0	0	0	0	0
0.055860016	0.015860184	0	0.000249963	0.021126573	0
0.055860016	0.00863101	0	0	0.14350883	0
0.055860016	0.015016269	0.005134634	0.000357259	0.013551429	0.007938445
0.055860016	0.007885562	0.006895773	0	0.131198737	0.114730775
0.055860016	0.01538858	0.003640415	0.000254039	0.018535899	0.005422197
0.055860016	0.009825062	0.022648097	0	0.16346782	0.376815448
0.319200087	0.008669661	0.025869303	0.000465083	0.021836348	0.083917715
0.319200091	0.011117248	0.03417923	0	0.184967014	0.5686686
0.045038932	0.013222836	0	0.000499357	0.014807346	0
0.055860034	0.010339146	0	0	0.171910221	0
0.055860034	0	0	0	0	0
0.034510881	0	0	0	0.378447626	0
0.017768145	0.003224919			0.017209801	

N2O_STREX	Calculated		
	DPM RUNEX	DPM VMT	DPM RUNEX*VMT
0.003629335			
0	0.0244573	2073942	50723.00228
0			
0.02310735			
0	0.00419206	273894.8	1148.18222
0			
0.026484719			
0	0.11510649	500.8045	57.64584723
0			
0.027796971			
0	0.00421762	60038.76	253.2206298
0			
0.039515296			
0	0.01665038	511419.9	8515.332922
0.039167717			
0	0.01692199	200055.3	3385.332526
0.014990769			
0.031241881			
0	0.00366122	155115.8	567.9129081
0			
0.038421628			
0	0.12550974	14490.48	1818.696722
0.028396585			
0	0.01020408	763294.7	7788.723923
0.024376329			
0	0.01563209	16706.49	261.1574004
0.054214428			
0	0.03472856	29066.07	1009.422917
0.052942895			
0	0.00426871	11.67769	0.049848729
0			
0			
	0.01842821	4098536	75528.68014

EMFAC2017 (v1.0.2) Emission Rates
Region Type: Sub-Area
Region: Riverside (SC)
Calendar Year: 2035
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HTSK and

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Population
Riverside (SC)	2035	HHDT	Aggregated	Aggregated	GAS	7.103144133
Riverside (SC)	2035	HHDT	Aggregated	Aggregated	DSL	17901.13187
Riverside (SC)	2035	HHDT	Aggregated	Aggregated	NG	663.1524866
Riverside (SC)	2035	LDA	Aggregated	Aggregated	GAS	787834.3673
Riverside (SC)	2035	LDA	Aggregated	Aggregated	DSL	9449.744415
Riverside (SC)	2035	LDA	Aggregated	Aggregated	ELEC	43636.4626
Riverside (SC)	2035	LDT1	Aggregated	Aggregated	GAS	82094.70741
Riverside (SC)	2035	LDT1	Aggregated	Aggregated	DSL	10.57836432
Riverside (SC)	2035	LDT1	Aggregated	Aggregated	ELEC	2518.04827
Riverside (SC)	2035	LDT2	Aggregated	Aggregated	GAS	245924.0852
Riverside (SC)	2035	LDT2	Aggregated	Aggregated	DSL	2361.131615
Riverside (SC)	2035	LDT2	Aggregated	Aggregated	ELEC	9367.025163
Riverside (SC)	2035	LHDT1	Aggregated	Aggregated	GAS	15310.43252
Riverside (SC)	2035	LHDT1	Aggregated	Aggregated	DSL	16640.73794
Riverside (SC)	2035	LHDT2	Aggregated	Aggregated	GAS	2412.33925
Riverside (SC)	2035	LHDT2	Aggregated	Aggregated	DSL	6858.506461
Riverside (SC)	2035	MCY	Aggregated	Aggregated	GAS	32583.93333
Riverside (SC)	2035	MDV	Aggregated	Aggregated	GAS	168357.6617
Riverside (SC)	2035	MDV	Aggregated	Aggregated	DSL	5637.316092
Riverside (SC)	2035	MDV	Aggregated	Aggregated	ELEC	6822.68647
Riverside (SC)	2035	MH	Aggregated	Aggregated	GAS	3109.015485
Riverside (SC)	2035	MH	Aggregated	Aggregated	DSL	1780.426314
Riverside (SC)	2035	MHDT	Aggregated	Aggregated	GAS	1890.281848
Riverside (SC)	2035	MHDT	Aggregated	Aggregated	DSL	14410.09067
Riverside (SC)	2035	OBUS	Aggregated	Aggregated	GAS	462.4317468
Riverside (SC)	2035	OBUS	Aggregated	Aggregated	DSL	291.0408385
Riverside (SC)	2035	SBUS	Aggregated	Aggregated	GAS	521.8323584
Riverside (SC)	2035	SBUS	Aggregated	Aggregated	DSL	1094.84822
Riverside (SC)	2035	UBUS	Aggregated	Aggregated	GAS	177.0694342
Riverside (SC)	2035	UBUS	Aggregated	Aggregated	DSL	0
Riverside (SC)	2035	UBUS	Aggregated	Aggregated	NG	221.0290541
Riverside (SC)	2035	Aggregated	Aggregated	Aggregated	Agg	
Riverside (SC)	2035	Aggregated	Aggregated	Aggregated	DSL	

X, HTSK and RUNLS, g/vehicle/day for IDLEX, RESTL and DIURN

VMT	Trips	ROG_RUNEX	ROG_IDLEX	ROG_STREX	ROG_HOTSOAK
647.5935877	142.1197078	0.263332882	0	0.001353928	0.048687231
2426809.283	195510.8794	0.016518747	4.757732993	0	0
27025.45813	2586.294698	0.074862427	0.020160315	0	0
27611546.54	3696593.608	0.002391649	0	0.088532522	0.052070391
337963.8579	44709.59872	0.004363996	0	0	0
1482270.433	210411.8651	0	0	0	0.004888026
2754326.227	378306.8082	0.004576892	0	0.114329343	0.081800273
365.0734218	49.30165382	0.013573529	0	0	0
86197.86604	12172.4515	0	0	0	0.004888026
8441585.194	1145953.068	0.004146576	0	0.127333339	0.06752592
83976.49529	11211.98745	0.011995827	0	0	0
221063.0408	45217.82433	0	0	0	0.004888026
472683.5192	228102.6319	0.004434913	0.314301536	0.05701949	0.073864741
498472.8962	209319.5492	0.038487645	0.109759705	0	0
72850.38072	35940.26044	0.003613122	0.317312414	0.053983635	0.063955663
197799.8306	86271.38327	0.039166601	0.109759705	0	0
177409.4801	65167.86666	2.021822316	0	1.762059059	0.749102075
5482277.682	773102.9009	0.004994228	0	0.152594307	0.098369472
191466.9266	26469.04615	0.005060276	0	0	0
162059.516	33011.74832	0	0	0	0.004888026
25272.85083	311.0259091	0.010145966	0	0.104352786	0.039245084
12315.64917	178.0426314	0.049875813	0	0	0
70663.36821	37820.75921	0.009077984	1.015878737	0.149299463	0.049606743
813377.4509	148983.7969	0.006978225	0.057056078	0	0
14385.60257	9252.334389	0.014716708	0.748784718	0.130957797	0.030842948
18982.78395	2790.939348	0.010221157	0.806317655	0	0
16196.77173	2087.329433	0.013713905	10.64151815	0.313376781	0.117022852
35050.10484	12634.39667	0.052201747	0.270520927	0	0
24930.45666	708.277737	0.010317624	0	0.197076044	0.021143216
0	0	0	0	0	0
28980.06939	884.1162163	0.080976757	0	0	0
51788952.41		0.01133439			
4616580.352					

ROG_RUNLOSS	ROG_RESTLOSS	ROG_DIURN	TOG_RUNEX	TOG_IDLEX	TOG_STREX
0.226156755	0.018301635	0.028346175	0.384254723	0	0.00148238
0	0	0	0.018805336	5.416316848	0
0	0	0	4.151629747	1.197272873	0
0.162985932	0.114419728	0.132646782	0.003489889	0	0.096931968
0	0	0	0.004968119	0	0
0	0.00943641	0.028301668	0	0	0
0.293791318	0.212869576	0.252611602	0.006678589	0	0.125176239
0	0	0	0.015452561	0	0
0	0.00943641	0.028301668	0	0	0
0.251746702	0.223176326	0.247551917	0.006050673	0	0.139413978
0	0	0	0.013656451	0	0
0	0.00943641	0.028301668	0	0	0
0.374818199	0.024008487	0.040043612	0.006471414	0.458628064	0.062429164
0	0	0	0.043815625	0.124954127	0
0.311430677	0.022648842	0.035674097	0.005272259	0.46302153	0.059105285
0	0	0	0.044588571	0.124954127	0
1.281970781	1.471220478	2.882840278	2.535437652	0	1.919323325
0.303459273	0.34396789	0.375928963	0.007287566	0	0.167071558
0	0	0	0.005760788	0	0
0	0.00943641	0.028301668	0	0	0
0.470569942	0.032400818	0.068993707	0.01480497	0	0.114253166
0	0	0	0.056780298	0	0
0.234346728	0.018036077	0.028402662	0.013246573	1.482367868	0.163464119
0	0	0	0.007944178	0.064954002	0
0.362887367	0.026504514	0.054999559	0.021474585	1.092624903	0.143382304
0	0	0	0.011636009	0.917931272	0
0.722357482	0.034363648	0.067044625	0.020011298	15.5280783	0.34310813
0	0	0	0.059427715	0.307967484	0
0.093517674	0.006500205	0.011335502	0.015055453	0	0.215773462
0	0	0	0	0	0
0	0	0	5.784054087	0	0
			0.01991015		

TOG_HOTSOAK	TOG_RUNLOSS	TOG_RESTLOSS	TOG_DIURN	CO_RUNEX	CO_IDLEX
0.048687231	0.226156755	0.018301635	0.028346175	25.87485513	0
0	0	0	0	0.148465632	70.21542672
0	0	0	0	14.60251173	22.09870203
0.052070391	0.162985932	0.114419728	0.132646782	0.406136035	0
0	0	0	0	0.127939396	0
0.004888026	0	0.00943641	0.028301668	0	0
0.081800273	0.293791318	0.212869576	0.252611602	0.484104022	0
0	0	0	0	0.141710402	0
0.004888026	0	0.00943641	0.028301668	0	0
0.06752592	0.251746702	0.223176326	0.247551917	0.499878437	0
0	0	0	0	0.121609776	0
0.004888026	0	0.00943641	0.028301668	0	0
0.073864741	0.374818199	0.024008487	0.040043612	0.147271805	3.776562329
0	0	0	0	0.214368449	0.909745076
0.063955663	0.311430677	0.022648842	0.035674097	0.120115692	3.780208284
0	0	0	0	0.218542348	0.909745076
0.749102075	1.281970781	1.471220478	2.882840278	16.93289564	0
0.098369472	0.303459273	0.34396789	0.375928963	0.522002218	0
0	0	0	0	0.14324825	0
0.004888026	0	0.00943641	0.028301668	0	0
0.039245084	0.470569942	0.032400818	0.068993707	0.209831041	0
0	0	0	0	0.212662167	0
0.049606743	0.234346728	0.018036077	0.028402662	0.201353964	14.50353865
0	0	0	0	0.055443012	2.369962777
0.030842948	0.362887367	0.026504514	0.054999559	0.352698827	5.789699742
0	0	0	0	0.085988231	13.0131068
0.117022852	0.722357482	0.034363648	0.067044625	0.275886288	82.24087757
0	0	0	0	0.206550693	9.628043544
0.021143216	0.093517674	0.006500205	0.011335502	0.199050374	0
0	0	0	0	0	0
0	0	0	0	43.77692612	0
				0.484144986	

CO_STREX	NOx_RUNEX	NOx_IDLEX	NOx_STREX	CO2_RUNEX	CO2_IDLEX	CO2_STREX
4.861454482	2.831556147	0	0.006548295	1552.531223	0	37.56482424
0	1.7289155	56.63970961	2.515629223	1009.165268	9580.239038	0
0	0.567958093	18.14549928	0	2709.733457	3168.528037	0
1.506341825	0.017774806	0	0.116624513	200.2146162	0	41.35432763
0	0.010744952	0	0	153.7222852	0	0
0	0	0	0	0	0	0
1.586766129	0.025558782	0	0.134812758	234.7369002	0	48.9153194
0	0.065750741	0	0	293.9048626	0	0
0	0	0	0	0	0	0
1.96575298	0.023908054	0	0.134286375	233.0832683	0	49.67774862
0	0.027390416	0	0	203.9230546	0	0
0	0	0	0	0	0	0
1.42879393	0.050415625	0.02738029	0.332539167	657.2802879	105.0824392	16.4926474
0	0.533129214	1.313615758	0	399.8329573	116.2306215	0
1.378367971	0.049773499	0.027631249	0.341412866	755.2951296	121.306847	18.78527784
0	0.557132258	1.355394725	0	438.9103727	188.7942666	0
8.82905321	1.104363053	0	0.262705272	206.739332	0	57.71931065
2.074049038	0.028152153	0	0.155949935	287.8838183	0	61.9607195
0	0.013245932	0	0	270.2629237	0	0
0	0	0	0	0	0	0
2.213085247	0.126599136	0	0.378698291	1384.369152	0	22.12226257
0	2.773896144	0	0	823.8335274	0	0
2.96609759	0.092346907	0.09015776	0.320421604	1325.310356	459.1833765	31.04663463
0	0.90401039	3.52517018	2.16073539	726.9440548	618.6629554	0
2.661525	0.14495325	0.065227053	0.29995536	1339.623509	329.0210199	22.58361063
0	1.233742601	11.36474667	2.217964012	908.4524274	2200.85115	0
6.567635998	0.18692662	0.9265304	0.668602149	818.0733419	2455.513467	43.55339994
0	2.853778922	23.61635424	1.721513166	994.1877796	3092.014471	0
4.255333655	0.125136803	0	0.440317987	1104.471064	0	43.09236624
0	0	0	0	0	0	0
0	0.443039317	0	0	1857.673012	0	0
	0.128633769			269.3509649		

CH4_RUNEX	CH4_IDLEX	CH4_STREX	PM10_RUNEX	PM10_IDLEX	PM10_STREX
0.060934196	0	0.000266205	0.000983727	0	0.000423414
0.000767253	0.220984375	0	0.022474637	0.020983724	0
4.048947389	1.169281883	0	0.003265738	0.009671832	0
0.000785166	0	0.023241544	0.000674908	0	0.001015134
0.000202699	0	0	0.001145203	0	0
0	0	0	0	0	0
0.001272725	0	0.027932957	0.000767852	0	0.001146441
0.000630464	0	0	0.00500653	0	0
0	0	0	0	0	0
0.001231116	0	0.031695758	0.000701117	0	0.00104019
0.000557183	0	0	0.003962051	0	0
0	0	0	0	0	0
0.001249233	0.095103273	0.012516772	0.000981205	0	0.000326556
0.001787678	0.005098128	0	0.008292392	0.027289074	0
0.00108053	0.096031326	0.012057084	0.000947382	0	0.000307493
0.001819214	0.005098128	0	0.012948328	0.027369226	0
0.304224507	0	0.232894813	0.002093386	0	0.002782888
0.001424734	0	0.036037322	0.000735611	0	0.001100665
0.00023504	0	0	0.001448729	0	0
0	0	0	0	0	0
0.003413785	0	0.029269379	0.000923599	0	0.000280002
0.002316636	0	0	0.07376053	0	0
0.002320577	0.268547571	0.030210168	0.000977872	0	0.000421009
0.00032412	0.002650107	0	0.010034182	0.001193296	0
0.003425067	0.195808027	0.025293527	0.000958972	0	0.000288423
0.000474746	0.037451367	0	0.014872832	0.003837885	0
0.002970715	2.349862919	0.053778986	0.001018132	0	0.000450908
0.002424636	0.012564996	0	0.013578303	0.011654227	0
0.003498079	0	0.051347057	0.001521068	0	0.000641017
0	0	0	0	0	0
5.667455554	0	0	0.003031726	0	0
0.007256989			0.00200828		

PM10_PMTW	PM10_PMBW	PM2_5_RUNEX	PM2_5_IDLEX	PM2_5_STREX	PM2_5_PMTW
0.020000006	0.061740018	0.0009045	0	0.000389314	0.005000001
0.035173206	0.060322049	0.021502394	0.020075978	0	0.008793302
0.03600001	0.061740018	0.003124464	0.009253433	0	0.009000003
0.008000002	0.036750011	0.000620553	0	0.000933378	0.002000001
0.008000002	0.036750011	0.001095662	0	0	0.002000001
0.008000002	0.036750011	0	0	0	0.002000001
0.008000002	0.036750011	0.000706012	0	0.00105411	0.002000001
0.008000002	0.036750011	0.00478995	0	0	0.002000001
0.008000002	0.036750011	0	0	0	0.002000001
0.008000002	0.036750011	0.000644651	0	0.000956416	0.002000001
0.008000002	0.036750011	0.003790654	0	0	0.002000001
0.008000002	0.036750011	0	0	0	0.002000001
0.008000002	0.076440022	0.000902182	0	0.000300256	0.002000001
0.012000003	0.076440022	0.007933667	0.026108561	0	0.003000001
0.008000002	0.089180026	0.000871083	0	0.000282729	0.002000001
0.012000003	0.089180026	0.01238819	0.026185246	0	0.003000001
0.004000001	0.011760003	0.001951841	0	0.002598295	0.001
0.008000002	0.036750011	0.000676367	0	0.001012021	0.002000001
0.008000002	0.036750011	0.001386057	0	0	0.002000001
0.008000002	0.036750011	0	0	0	0.002000001
0.012000003	0.130340037	0.000849215	0	0.000257451	0.003000001
0.016000005	0.130340037	0.070569683	0	0	0.004000001
0.012000003	0.130340037	0.000899117	0	0.000387102	0.003000001
0.012000003	0.130340037	0.009600107	0.001141675	0	0.003000001
0.012000003	0.130340037	0.000881739	0	0.000265194	0.003000001
0.012000003	0.130340037	0.01422944	0.003671859	0	0.003000001
0.008000002	0.744800204	0.000936135	0	0.000414593	0.002000001
0.012000003	0.744800213	0.012990911	0.011150071	0	0.003000001
0.009546243	0.105090841	0.001398566	0	0.000589391	0.002386561
0	0	0	0	0	0
0.029419661	0.080548901	0.002900574	0	0	0.007354915
0.009418314	0.041284472	0.001898629			0.002354578

PM2_5_PMBW	SOx_RUNEX	SOx_IDLEX	SOx_STREX	N2O_RUNEX	N2O_IDLEX
0.026460008	0.015363555	0	0.000371734	0.125977166	0
0.025852307	0.009534093	0.090509348	0	0.158626727	1.505880164
0.026460008	0	0	0	0.552396892	0.645925168
0.015750005	0.001981286	0	0.000409235	0.00292968	0
0.015750005	0.001453228	0	0	0.024163003	0
0.015750005	0	0	0	0	0
0.015750005	0.002322912	0	0.000484057	0.003459546	0
0.015750005	0.002778458	0	0	0.046197752	0
0.015750005	0	0	0	0	0
0.015750005	0.002306548	0	0.000491602	0.003228921	0
0.015750005	0.001927806	0	0	0.032053864	0
0.015750005	0	0	0	0	0
0.032760009	0.006504321	0.001039876	0.000163208	0.004094445	0.002664178
0.032760009	0.003779859	0.001098797	0	0.062848173	0.018269835
0.038220011	0.007474258	0.00120043	0.000185896	0.004375717	0.002645048
0.038220011	0.004149281	0.001784785	0	0.068990598	0.02967583
0.005040001	0.002045853	0	0.000571179	0.063983761	0
0.015750005	0.002848844	0	0.000613152	0.003529831	0
0.015750005	0.002554957	0	0	0.042481568	0
0.015750005	0	0	0	0	0
0.055860016	0.013699455	0	0.000218918	0.01305392	0
0.055860016	0.00778819	0	0	0.129495158	0
0.055860016	0.01311502	0.004543992	0.000307232	0.007922989	0.0082148
0.055860016	0.006867807	0.005844821	0	0.114265482	0.097245201
0.055860016	0.013256661	0.00325593	0.000223483	0.01008365	0.005585891
0.055860016	0.008582608	0.02079255	0	0.142796071	0.345943152
0.319200087	0.008095499	0.024299296	0.000430996	0.015546839	0.084966895
0.319200091	0.009392593	0.02921182	0	0.156272474	0.486021616
0.045038932	0.010929637	0	0.000426434	0.013301445	0
0	0	0	0	0	0
0.034520958	0	0	0	0.378698796	0
0.017693345	0.002610835			0.014093797	

N2O_STREX	Calculated		
	DPM RUNEX	DPM VMT	DPM RUNEX*VMT
0.000324733			
0	0.02247464	2426809	54541.65704
0			
0.019083736			
0	0.0011452	337963.9	387.0370894
0			
0.020542746			
0	0.00500653	365.0734	1.82775121
0			
0.020600016			
0	0.00396205	83976.5	332.719133
0			
0.030913798			
0	0.00829239	498472.9	4133.532566
0.031107416			
0	0.01294833	197799.8	2561.177182
0.014977115			
0.022075265			
0	0.00144873	191466.9	277.3836611
0			
0.04418333			
0	0.07376053	12315.65	908.4088151
0.028814472			
0	0.01003418	813377.5	8161.57706
0.024504136			
0	0.01487283	18982.78	282.3277583
0.058520621			
0	0.0135783	35050.1	475.9209323
0.049770268			
0	0	0	0
0			
	0.01560973	4616580	72063.56899

EMFAC2014 (v1.0.7) Emission Rates
Region Type: Sub-Area
Region: Riverside (SC)
Calendar Year: 2025
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HTSK and

Region	CalYr	VehClass	MdlYr	Speed	Fuel	Population	VMT
Riverside (SC)	2025	HHDT	Aggregated	Aggregated	GAS	75.82556005	6723.067922
Riverside (SC)	2025	HHDT	Aggregated	Aggregated	DSL	14644.17054	2225620.615
Riverside (SC)	2025	LDA	Aggregated	Aggregated	GAS	697901.6635	24640472.92
Riverside (SC)	2025	LDA	Aggregated	Aggregated	DSL	8260.913297	303682.8994
Riverside (SC)	2025	LDA	Aggregated	Aggregated	ELEC	49152.14643	2197310.995
Riverside (SC)	2025	LDT1	Aggregated	Aggregated	GAS	48437.50463	1639063.834
Riverside (SC)	2025	LDT1	Aggregated	Aggregated	DSL	39.79175316	1031.113926
Riverside (SC)	2025	LDT1	Aggregated	Aggregated	ELEC	19.55741323	689.120993
Riverside (SC)	2025	LDT2	Aggregated	Aggregated	GAS	230182.8043	8737816.063
Riverside (SC)	2025	LDT2	Aggregated	Aggregated	DSL	459.0683234	18274.27383
Riverside (SC)	2025	LHDT1	Aggregated	Aggregated	GAS	10148.05026	246914.2877
Riverside (SC)	2025	LHDT1	Aggregated	Aggregated	DSL	12334.64064	341541.6868
Riverside (SC)	2025	LHDT2	Aggregated	Aggregated	GAS	1835.755699	57908.1947
Riverside (SC)	2025	LHDT2	Aggregated	Aggregated	DSL	4627.244468	146595.5045
Riverside (SC)	2025	MCY	Aggregated	Aggregated	GAS	31370.03395	177054.7204
Riverside (SC)	2025	MDV	Aggregated	Aggregated	GAS	153038.1547	4877829.048
Riverside (SC)	2025	MDV	Aggregated	Aggregated	DSL	2919.277825	108295.3829
Riverside (SC)	2025	MH	Aggregated	Aggregated	GAS	4154.392913	28389.46929
Riverside (SC)	2025	MH	Aggregated	Aggregated	DSL	1260.387976	8703.521343
Riverside (SC)	2025	MHDT	Aggregated	Aggregated	GAS	1348.476331	49551.47253
Riverside (SC)	2025	MHDT	Aggregated	Aggregated	DSL	13888.95825	718754.8187
Riverside (SC)	2025	OBUS	Aggregated	Aggregated	GAS	733.814781	26823.97821
Riverside (SC)	2025	OBUS	Aggregated	Aggregated	DSL	277.5933224	22574.17133
Riverside (SC)	2025	SBUS	Aggregated	Aggregated	GAS	418.6261046	12917.38426
Riverside (SC)	2025	SBUS	Aggregated	Aggregated	DSL	842.5091492	31837.46978
Riverside (SC)	2025	UBUS	Aggregated	Aggregated	GAS	216.6767905	19842.41765
Riverside (SC)	2025	UBUS	Aggregated	Aggregated	DSL	193.144473	17687.41954
Riverside (SC)	2035	Aggregated	Aggregated	Aggregated	Agg		46663905.86
Riverside (SC)	2035	Aggregated	Aggregated	Aggregated	DSL		3944598.877

EX, HTSK and RUNLS, g/vehicle/day for IDLEX, RESTL and DIURN

Trips	ROG_RUNEX	ROG_IDLEX	ROG_STREX	ROG_HOTSOAK	ROG_RUNLOSS
1517.117805	0.284593055	0	0.909559477	0.058317996	0.259303309
0	0.050561875	1.014902259	0	0	0
4414351.753	0.007425944	0	0.048363763	0.083181319	0.192509323
52280.1498	0.009171619	0	0	0	0
319282.6868	0	0	0	0.004883985	0
293533.1003	0.017458064	0	0.153403375	0.256018432	0.869594416
204.7068104	0.079756021	0	0	0	0
119.9887218	0	0	0	0.004883985	0
1458010.849	0.009623856	0	0.063866581	0.090368905	0.32526471
2940.883886	0.01204291	0	0	0	0
151190.8283	0.026721091	0.323852026	0.404618706	0.184900932	1.188545661
155154.2623	0.089266321	0.109759705	0	0	0
27350.02464	0.008312689	0.29855013	0.211288725	0.078267479	0.424782995
58204.91433	0.055880773	0.109759705	0	0	0
62733.7939	2.084718328	0	2.05848098	0.767553321	1.729497745
943991.5864	0.019771802	0	0.164863222	0.175347716	0.533601721
18620.74524	0.008171697	0	0	0	0
415.6054671	0.057439302	0	0.37894039	0.092424919	2.263980175
126.0387976	0.070207469	0	0	0	0
26980.31442	0.023686387	0.772167588	0.507721549	0.066971395	0.324819593
0	0.019838142	0.016813785	0	0	0
14682.16614	0.019413797	0.576969987	0.339173235	0.01821024	0.18750777
0	0.029587072	0.182359874	0	0	0
1674.504418	0.034786654	7.827342717	0.782913584	0.084572278	0.520184831
0	0.113625127	0.17635567	0	0	0
866.7071622	0.410040404	0	2.107916718	0.182645935	1.498268533
772.5778918	0.349401126	0	0	0	0
	0.020629658				

ROG_RESTLOSS	ROG_DIURN	TOG_RUNEX	TOG_IDLEX	TOG_STREX	TOG_HOTSOAK
0.020098938	0.031409163	0.415277517	0	0.995853139	0.058317996
0	0	0.110548671	1.184485682	0	0
0.176908662	0.222826335	0.01083592	0	0.052952233	0.083181319
0	0	0.010441278	0	0	0
0.009436404	0.028301667	0	0	0	0.004883985
0.590730821	0.844219375	0.025474766	0	0.167957387	0.256018432
0	0	0.090796927	0	0	0
0.009436404	0.028301667	0	0	0	0.004883985
0.260384478	0.305250005	0.014043109	0	0.069925867	0.090368905
0	0	0.013710053	0	0	0
0.047760269	0.088764518	0.038991354	0.472564117	0.443006553	0.184900932
0	0	0.101623772	0.124954127	0	0
0.023789725	0.040497819	0.012129856	0.435643649	0.231334559	0.078267479
0	0	0.063616545	0.124954127	0	0
1.498210033	2.848382504	2.590264026	0	2.240743366	0.767553321
0.479993836	0.540242234	0.02884734	0	0.180504113	0.175347716
0	0	0.009302934	0	0	0
0.056477019	0.150163072	0.083815295	0	0.414892029	0.092424919
0	0	0.079926536	0	0	0
0.021199619	0.037189356	0.03456312	1.126745131	0.555891189	0.066971395
0	0	0.022584215	0.019141214	0	0
0.017134626	0.036336228	0.028328567	0.841913251	0.371352	0.01821024
0	0	0.033682629	0.207602835	0	0
0.023925852	0.047476067	0.050760604	11.42164012	0.857191827	0.084572278
0	0	0.129353558	0.200767506	0	0
0.030475029	0.057059046	0.598329996	0	2.307903479	0.182645935
0	0	2.662589734	0	0	0
		0.030533095			

TOG_RUNLOSS	TOG_RESTLOSS	TOG_DIURN	CO_RUNEX	CO_IDLEX	CO_STREX
0.259303309	0.020098938	0.031409163	25.16598906	0	41.28454355
0	0	0	0.450751479	3.92503764	0
0.192509323	0.176908662	0.222826335	0.485114392	0	0.885938032
0	0	0	0.155811323	0	0
0	0.009436404	0.028301667	0	0	0
0.869594416	0.590730821	0.844219375	0.943723413	0	2.276753473
0	0	0	0.521490316	0	0
0	0.009436404	0.028301667	0	0	0
0.32526471	0.260384478	0.305250005	0.592502791	0	1.107053498
0	0	0	0.112221147	0	0
1.188545661	0.047760269	0.088764518	0.764413191	3.018248114	3.874302527
0	0	0	0.612398861	0.909745076	0
0.424782995	0.023789725	0.040497819	0.232997363	3.111050372	2.801271304
0	0	0	0.360019752	0.909745076	0
1.729497745	1.498210033	2.848382504	18.17785375	0	9.805970651
0.533601721	0.479993836	0.540242234	0.970071323	0	2.239992882
0	0	0	0.157425868	0	0
2.263980175	0.056477019	0.150163072	1.928703957	0	6.407232551
0	0	0	0.337917107	0	0
0.324819593	0.021199619	0.037189356	0.640720897	11.99714682	8.256144054
0	0	0	0.103803837	0.125888701	0
0.18750777	0.017134626	0.036336228	0.507245094	4.836336158	5.503937422
0	0	0	0.165655734	0.722053898	0
0.520184831	0.023925852	0.047476067	0.787093548	66.62718604	14.01529162
0	0	0	0.366627896	1.559805855	0
1.498268533	0.030475029	0.057059046	4.554115799	0	25.94754182
0	0	0	9.539054098	0	0
			0.617042573		

NOx_RUNEX	NOx_IDLEX	NOx_STREX	CO2_RUNEX	CO2_IDLEX	CO2_STREX	PM10_RUNEX
2.754022503	0	3.282202737	1568.35631	0	134.8638425	0.000826251
1.060274974	33.5150815	0	1435.360395	11223.38516	0	0.005346503
0.037458423	0	0.049148615	233.2237303	0	54.68103553	0.001598812
0.039036584	0	0	219.7185776	0	0	0.004663469
0	0	0	0	0	0	0
0.08845592	0	0.133878081	270.3074781	0	64.3468339	0.002059202
0.478638671	0	0	281.9072996	0	0	0.05960998
0	0	0	0	0	0	0
0.051954737	0	0.077343232	301.1123395	0	70.93787578	0.001605199
0.030872439	0	0	280.8335896	0	0	0.004104705
0.252172114	0.028139285	1.71887884	728.9574895	114.3872	56.65036857	0.001048732
2.758154671	2.147163012	0	478.2886787	135.7184659	0	0.020513635
0.102640851	0.025901735	1.155826566	764.1634816	129.732458	66.58502516	0.000860586
1.363725969	1.910630792	0	508.8651918	213.8323545	0	0.014144141
1.117556552	0	0.309312467	166.4634862	0	44.82778913	0.001901895
0.107119964	0	0.199301324	423.4969184	0	100.0995331	0.001578295
0.027184447	0	0	368.4921674	0	0	0.003672471
0.412570057	0	0.993350674	1015.046262	0	75.24983268	0.001207069
4.095152735	0	0	935.0112637	0	0	0.140632415
0.211752901	0.068358186	1.202458555	984.0410766	512.3583119	110.3926452	0.00090069
0.463538302	1.893366847	0	1060.750616	643.4614197	0	0.002858666
0.174776949	0.050077078	0.884627569	983.6199599	358.625203	73.09353159	0.000872081
0.624823999	6.556270496	0	1236.952233	2598.283468	0	0.003684774
0.240602674	0.678646805	1.057796031	665.3404544	2474.027929	125.4006437	0.000720864
4.72372863	33.2426459	0	1281.456372	3692.343406	0	0.026019909
1.152014874	0	3.641246396	1629.420626	0	300.6699192	0.002310346
5.817080784	0	0	1902.195311	0	0	0.073789346
0.140058579			336.7323928			0.002008588

PM10_IDLEX	PM10_STREX	PM10_PMTW	PM10_PMBW	PM2_5_RUNEX	PM2_5_IDLEX
0	0.001179011	0.020000006	0.061740018	0.000759707	0
0.013854693	0	0.0350977	0.060192556	0.005115216	0.013255345
0	0.002399514	0.008000002	0.036750011	0.001470048	0
0	0	0.008000002	0.036750011	0.004461729	0
0	0	0.008000002	0.036750011	0	0
0	0.003143398	0.008000002	0.036750011	0.00189336	0
0	0	0.008000002	0.036750011	0.057031279	0
0	0	0.008000002	0.036750011	0	0
0	0.002416984	0.008000002	0.036750011	0.001475922	0
0	0	0.008000002	0.036750011	0.003927137	0
0	0.001468157	0.008000002	0.076440022	0.00096427	0
0.024043222	0	0.012000003	0.076440022	0.019626224	0.023003123
0	0.001037171	0.008000002	0.089180026	0.000791277	0
0.023335616	0	0.012000003	0.089180026	0.013532272	0.022326128
0	0.003167998	0.004000001	0.011760003	0.001776049	0
0	0.002389065	0.008000002	0.036750011	0.001451193	0
0	0	0.008000002	0.036750011	0.003513602	0
0	0.001215551	0.012000003	0.130340037	0.001109855	0
0	0	0.016000005	0.130340037	0.134548719	0
0	0.001452601	0.012000003	0.130340037	0.000828151	0
0.000514481	0	0.012000003	0.130340037	0.002735001	0.000492225
0	0.00097645	0.012000003	0.130340037	0.000801846	0
0.000605756	0	0.012000003	0.130340037	0.003525372	0.000579551
0	0.001111237	0.008000002	0.744800213	0.000662808	0
0.028030122	0	0.012000003	0.744800213	0.024894299	0.026817551
0	0.003136655	0.012000003	0.130340037	0.002124278	0
0	0	0.012000003	0.841820241	0.070597252	0
		0.009400778	0.041245593	0.001869635	

PM2_5_STREX	PM2_5_PMTW	PM2_5_PMBW	SOx_RUNEX	SOx_IDLEX	SOx_STREX
0.001084057	0.005000001	0.026460008	0.016061849	0	0.002023964
0	0.008774425	0.02579681	0.013335	0.104455548	0
0.002206264	0.002000001	0.015750005	0.00233591	0	0.000561316
0	0.002000001	0.015750005	0.00209757	0	0
0	0.002000001	0.015750005	0	0	0
0.002890239	0.002000001	0.015750005	0.002713693	0	0.000683102
0	0.002000001	0.015750005	0.002691262	0	0
0	0.002000001	0.015750005	0	0	0
0.002222328	0.002000001	0.015750005	0.003015336	0	0.000727571
0	0.002000001	0.015750005	0.002681011	0	0
0.001349916	0.002000001	0.032760009	0.007289411	0.001202949	0.000639681
0	0.003000001	0.032760009	0.00456604	0.001295653	0
0.00095364	0.002000001	0.038220011	0.007631708	0.001356498	0.000715594
0	0.003000001	0.038220011	0.004857942	0.002041376	0
0.002973901	0.001	0.005040001	0.00202287	0	0.000669028
0.002196673	0.002000001	0.015750005	0.004243305	0	0.001039781
0	0.002000001	0.015750005	0.003517855	0	0
0.001117654	0.003000001	0.055860016	0.010164654	0	0.000864214
0	0.004000001	0.055860016	0.008926197	0	0
0.001335613	0.003000001	0.055860016	0.009833525	0.005335373	0.00124828
0	0.003000001	0.055860016	0.010120057	0.006138923	0
0.00089781	0.003000001	0.055860016	0.009827045	0.003680194	0.000827201
0	0.003000001	0.055860016	0.011801103	0.024788839	0
0.001021742	0.002000001	0.319200091	0.006655101	0.026074268	0.001497563
0	0.003000001	0.319200091	0.012225693	0.035226682	0
0.002884039	0.003000001	0.055860016	0.016353421	0	0.003478235
0	0.003000001	0.360780103	0.002468571	0	0
	0.002350195	0.017676683	0.003306198		

	Calculated	
DPM RUNEX	DPM VMT	DPM RUNEX*VMT
0.0053465	2225621	11899.288
0.00466347	303682.9	1416.215639
0.05960998	1031.114	61.46468083
0.0041047	18274.27	75.01050276
0.02051364	341541.7	7006.26158
0.01414414	146595.5	2073.467547
0.00367247	108295.4	397.7116924
0.14063241	8703.521	1223.997224
0.00285867	718754.8	2054.679777
0.00368477	22574.17	83.18070833
0.02601991	31837.47	828.4080666
0.07378935	17687.42	1305.143129
0.00720601	3944599	28424.82855

EMFAC2014 (v1.0.7) Emission Rates
Region Type: Sub-Area
Region: Riverside (SC)
Calendar Year: 2035
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HTSK and

Region	CalYr	VehClass	MdlYr	Speed	Fuel	Population	VMT
Riverside (SC)	2035	HHDT	Aggregated	Aggregated	GAS	98.53931482	8036.296489
Riverside (SC)	2035	HHDT	Aggregated	Aggregated	DSL	16517.17416	2708162.717
Riverside (SC)	2035	LDA	Aggregated	Aggregated	GAS	873190.2376	27854736.05
Riverside (SC)	2035	LDA	Aggregated	Aggregated	DSL	11690.06889	380450.2878
Riverside (SC)	2035	LDA	Aggregated	Aggregated	ELEC	135435.3633	4655126.113
Riverside (SC)	2035	LDT1	Aggregated	Aggregated	GAS	56816.37536	1846976.203
Riverside (SC)	2035	LDT1	Aggregated	Aggregated	DSL	29.84991304	1001.815949
Riverside (SC)	2035	LDT1	Aggregated	Aggregated	ELEC	24.92677669	821.1196369
Riverside (SC)	2035	LDT2	Aggregated	Aggregated	GAS	306482.6823	10500864.08
Riverside (SC)	2035	LDT2	Aggregated	Aggregated	DSL	662.3703605	22959.51426
Riverside (SC)	2035	LHDT1	Aggregated	Aggregated	GAS	6979.977294	175402.7163
Riverside (SC)	2035	LHDT1	Aggregated	Aggregated	DSL	11593.36332	313142.7752
Riverside (SC)	2035	LHDT2	Aggregated	Aggregated	GAS	1979.167794	60750.77552
Riverside (SC)	2035	LHDT2	Aggregated	Aggregated	DSL	4930.945193	150864.5425
Riverside (SC)	2035	MCY	Aggregated	Aggregated	GAS	38422.50719	198907.3333
Riverside (SC)	2035	MDV	Aggregated	Aggregated	GAS	177033.623	5303654.417
Riverside (SC)	2035	MDV	Aggregated	Aggregated	DSL	4531.575685	143946.6072
Riverside (SC)	2035	MH	Aggregated	Aggregated	GAS	3194.367257	22203.27785
Riverside (SC)	2035	MH	Aggregated	Aggregated	DSL	943.2646843	6458.508363
Riverside (SC)	2035	MHDT	Aggregated	Aggregated	GAS	1755.895732	59903.29269
Riverside (SC)	2035	MHDT	Aggregated	Aggregated	DSL	16049.53962	787269.9606
Riverside (SC)	2035	OBUS	Aggregated	Aggregated	GAS	944.8795392	31541.30991
Riverside (SC)	2035	OBUS	Aggregated	Aggregated	DSL	369.5376274	25979.97944
Riverside (SC)	2035	SBUS	Aggregated	Aggregated	GAS	403.0844349	11437.48752
Riverside (SC)	2035	SBUS	Aggregated	Aggregated	DSL	866.2475375	31989.04797
Riverside (SC)	2035	UBUS	Aggregated	Aggregated	GAS	265.6038554	22366.75084
Riverside (SC)	2035	UBUS	Aggregated	Aggregated	DSL	252.4036474	21255.14889
Riverside (SC)	2035	Aggregated	Aggregated	Aggregated	Agg		55346208.12
Riverside (SC)	2035	Aggregated	Aggregated	Aggregated	DSL		4593480.905

EX, HTSK and RUNLS, g/vehicle/day for IDLEX, RESTL and DIURN

Trips	ROG_RUNEX	ROG_IDLEX	ROG_STREX	ROG_HOTSOAK	ROG_RUNLOSS
1971.574611	0.26316365	0	0.708763132	0.049239346	0.236187058
0	0.049215862	0.958913975	0	0	0
5506543.016	0.004162814	0	0.018147752	0.05132436	0.160944808
74224.51861	0.004098496	0	0	0	0
867839.6262	0	0	0	0.004883985	0
350822.8469	0.006053845	0	0.04005729	0.098525688	0.344506812
187.1598713	0.012852641	0	0	0	0
154.723023	0	0	0	0.004883985	0
1936893.279	0.005278579	0	0.025125359	0.051496562	0.208594128
4211.136718	0.011873537	0	0	0	0
103991.2615	0.006514765	0.269739385	0.226471621	0.129318793	0.634977887
145829.9262	0.045140293	0.109759705	0	0	0
29486.65116	0.003094835	0.228500171	0.098533874	0.044802642	0.218429817
62025.0874	0.029856779	0.109759705	0	0	0
76837.32988	2.018234141	0	1.986749116	0.705212116	1.272965131
1084382.914	0.009294802	0	0.064881451	0.117490474	0.352405297
28627.64618	0.004773332	0	0	0	0
319.5645004	0.01350469	0	0.266569398	0.040884504	0.529065639
94.32646843	0.042139191	0	0	0	0
35131.96181	0.00895481	0.7910485	0.367831228	0.049619466	0.234710297
0	0.02026184	0.015944693	0	0	0
18905.14982	0.009041801	0.588615289	0.276894791	0.016377024	0.181567216
0	0.02770422	0.168568434	0	0	0
1612.33774	0.012026822	8.110807533	0.699137325	0.092473232	0.585594655
0	0.069894243	0.106261205	0	0	0
1062.415422	0.088295385	0	1.648949342	0.11729801	0.944431325
1009.61459	0.089742991	0	0	0	0
	0.014734983				

ROG_RESTLOSS	ROG_DIURN	TOG_RUNEX	TOG_IDLEX	TOG_STREX	TOG_HOTSOAK
0.019037754	0.029427906	0.38400778	0	0.776006416	0.049239346
0	0	0.10862566	1.116651686	0	0
0.110349337	0.132363459	0.006074368	0	0.019869505	0.05132436
0	0	0.004665866	0	0	0
0.009436404	0.028301667	0	0	0	0.004883985
0.250170437	0.319032682	0.008833756	0	0.043857691	0.098525688
0	0	0.014631877	0	0	0
0.009436404	0.028301667	0	0	0	0.004883985
0.167809662	0.191797772	0.007702491	0	0.027509106	0.051496562
0	0	0.013517232	0	0	0
0.036700266	0.061049482	0.00950633	0.393603078	0.247957919	0.129318793
0	0	0.051389222	0.124954127	0	0
0.017540193	0.027745578	0.004515976	0.333426913	0.107882189	0.044802642
0	0	0.033989957	0.124954127	0	0
1.42151548	2.790618272	2.532190492	0	2.16414319	0.705212116
0.382733752	0.424728787	0.013562954	0	0.071037023	0.117490474
0	0	0.005434121	0	0	0
0.03241205	0.072731904	0.019706012	0	0.291859937	0.040884504
0	0	0.047972667	0	0	0
0.018143427	0.028519084	0.013066837	1.154296115	0.402728895	0.049619466
0	0	0.023066562	0.01815182	0	0
0.016920057	0.034693431	0.013193775	0.858906048	0.303164942	0.016377024
0	0	0.031539145	0.19190233	0	0
0.028016057	0.055180286	0.017549511	11.83527131	0.765467369	0.092473232
0	0	0.079569275	0.120970293	0	0
0.02510915	0.040929181	0.128840418	0	1.805391972	0.11729801
0	0	1.861140261	0	0	0
		0.022249419			

TOG_RUNLOSS	TOG_RESTLOSS	TOG_DIURN	CO_RUNEX	CO_IDLEX	CO_STREX
0.236187058	0.019037754	0.029427906	26.03723469	0	41.43848735
0	0	0	0.467668204	3.685491522	0
0.160944808	0.110349337	0.132363459	0.331496296	0	0.501392534
0	0	0	0.121871595	0	0
0	0.009436404	0.028301667	0	0	0
0.344506812	0.250170437	0.319032682	0.410126648	0	0.775079275
0	0	0	0.130456927	0	0
0	0.009436404	0.028301667	0	0	0
0.208594128	0.167809662	0.191797772	0.415353041	0	0.630710088
0	0	0	0.117218812	0	0
0.634977887	0.036700266	0.061049482	0.201133322	3.11399873	2.881310265
0	0	0	0.265160287	0.909745076	0
0.218429817	0.017540193	0.027745578	0.109129012	3.168513727	2.502340201
0	0	0	0.143770534	0.909745076	0
1.272965131	1.42151548	2.790618272	16.872905	0	9.950797466
0.352405297	0.382733752	0.424728787	0.574406754	0	1.100756506
0	0	0	0.137763198	0	0
0.529065639	0.03241205	0.072731904	0.32525975	0	4.38314271
0	0	0	0.166887618	0	0
0.234710297	0.018143427	0.028519084	0.199262019	12.1473987	5.622268888
0	0	0	0.106542998	0.119607166	0
0.181567216	0.016920057	0.034693431	0.197045072	4.881581098	4.304186756
0	0	0	0.154709364	0.672047834	0
0.585594655	0.028016057	0.055180286	0.221658236	67.88464516	12.02531542
0	0	0	0.320073328	0.826843958	0
0.944431325	0.02510915	0.040929181	1.578497843	0	18.86960044
0	0	0	7.78497955	0	0
			0.411495503		

NOx_RUNEX	NOx_IDLEX	NOx_STREX	CO2_RUNEX	CO2_IDLEX	CO2_STREX	PM10_RUNEX
2.847291608	0	3.173378745	1520.73012	0	127.3000392	0.000976672
0.778768422	30.83449814	0	1396.49165	10742.10639	0	0.004893024
0.023268066	0	0.02089988	193.2857776	0	44.25594833	0.000914481
0.010104632	0	0	185.2824486	0	0	0.001040413
0	0	0	0	0	0	0
0.031566934	0	0.039306767	213.2436001	0	49.70817233	0.000989421
0.050195903	0	0	201.8883562	0	0	0.004508549
0	0	0	0	0	0	0
0.028868074	0	0.030537571	240.6883657	0	55.26823808	0.000899866
0.026794899	0	0	230.0809425	0	0	0.00385343
0.095687433	0.024342752	1.186659946	696.1448892	110.1350035	56.14067734	0.000953089
0.817860757	1.393267045	0	450.3305674	127.8459583	0	0.009487293
0.038372632	0.020532511	0.657946957	737.9916608	124.6657712	64.97473315	0.000970005
0.179834074	1.071330765	0	482.2469364	200.6383797	0	0.007069167
1.103438797	0	0.307382638	168.1351375	0	42.16852001	0.002114696
0.050863473	0	0.076954952	328.6676774	0	76.55644994	0.000993141
0.011262839	0	0	304.9964899	0	0	0.001312247
0.156287441	0	0.759708741	986.6103085	0	72.58790857	0.000947395
2.396732657	0	0	912.1754449	0	0	0.053129609
0.094137508	0.072373652	0.797981559	973.5707111	500.1232115	107.7564722	0.000974838
0.371689305	1.763079013	0	1043.427185	630.3566141	0	0.002703538
0.093676937	0.05278345	0.690884195	974.3877811	351.1336241	71.56662841	0.00097566
0.447897482	6.155922993	0	1205.154572	2373.61328	0	0.003303713
0.101397738	0.730149195	0.890289741	646.5742234	2404.246843	121.8636614	0.00115605
1.713868047	12.86613478	0	1250.071164	3471.740424	0	0.005983573
0.629920533	0	2.981046886	1593.068475	0	293.7930697	0.002256089
1.348147358	0	0	1793.423996	0	0	0.010624064
0.078952815			279.464333			0.00115249

PM10_IDLEX	PM10_STREX	PM10_PMTW	PM10_PMBW	PM2_5_RUNEX	PM2_5_IDLEX
0	0.00149954	0.020000006	0.061740018	0.000898014	0
0.00515013	0	0.035057084	0.060122899	0.004681354	0.004927337
0	0.001566049	0.008000002	0.036750011	0.000840832	0
0	0	0.008000002	0.036750011	0.000995405	0
0	0	0.008000002	0.036750011	0	0
0	0.001702031	0.008000002	0.036750011	0.000909736	0
0	0	0.008000002	0.036750011	0.004313511	0
0	0	0.008000002	0.036750011	0	0
0	0.001531932	0.008000002	0.036750011	0.000827394	0
0	0	0.008000002	0.036750011	0.003686732	0
0	0.001166086	0.008000002	0.076440022	0.00087633	0
0.016826705	0	0.012000003	0.076440022	0.009076877	0.016098789
0	0.001139431	0.008000002	0.089180026	0.000891884	0
0.017619778	0	0.012000003	0.089180026	0.006763358	0.016857554
0	0.003223166	0.004000001	0.011760003	0.00197164	0
0	0.00168103	0.008000002	0.036750011	0.000913157	0
0	0	0.008000002	0.036750011	0.00125548	0
0	0.001058644	0.012000003	0.130340037	0.000871094	0
0	0	0.016000005	0.130340037	0.050831246	0
0	0.001503103	0.012000003	0.130340037	0.000896327	0
0.00018808	0	0.012000003	0.130340037	0.002586584	0.000179943
0	0.001108202	0.012000003	0.130340037	0.000897084	0
0.000566558	0	0.012000003	0.130340037	0.003160796	0.000542049
0	0.001859631	0.008000002	0.744800213	0.001062945	0
0.002608846	0	0.012000003	0.744800213	0.005724726	0.002495988
0	0.003291952	0.012000003	0.130340037	0.00207439	0
0	0	0.012000003	0.841820241	0.010164472	0
		0.00941823	0.040839167	0.001073875	

PM2_5_STREX	PM2_5_PMTW	PM2_5_PMBW	SOx_RUNEX	SOx_IDLEX	SOx_STREX
0.001378772	0.005000001	0.026460008	0.015599207	0	0.001944209
0	0.008764271	0.025766957	0.012946989	0.0995514	0
0.001439925	0.002000001	0.015750005	0.00193471	0	0.00045022
0	0.002000001	0.015750005	0.001768821	0	0
0	0.002000001	0.015750005	0	0	0
0.001564955	0.002000001	0.015750005	0.002135238	0	0.000509663
0	0.002000001	0.015750005	0.001927351	0	0
0	0.002000001	0.015750005	0	0	0
0.001408555	0.002000001	0.015750005	0.002409234	0	0.000562402
0	0.002000001	0.015750005	0.002196495	0	0
0.001072173	0.002000001	0.032760009	0.006952186	0.001159697	0.0006131
0	0.003000001	0.032760009	0.004299135	0.001220497	0
0.001047664	0.002000001	0.038220011	0.007368301	0.001303835	0.000691086
0	0.003000001	0.038220011	0.004603828	0.001915418	0
0.003009103	0.001	0.005040001	0.002017355	0	0.000642465
0.001545645	0.002000001	0.015750005	0.003290089	0	0.000783589
0	0.002000001	0.015750005	0.002911685	0	0
0.000973384	0.003000001	0.055860016	0.009853788	0	0.000802162
0	0.004000001	0.055860016	0.008708192	0	0
0.001382048	0.003000001	0.055860016	0.009721459	0.005216407	0.001176006
0	0.003000001	0.055860016	0.009954783	0.006013897	0
0.001018951	0.003000001	0.055860016	0.009729584	0.003606621	0.000791072
0	0.003000001	0.055860016	0.011497738	0.02264538	0
0.001709862	0.002000001	0.319200091	0.00645794	0.025409551	0.001428261
0	0.003000001	0.319200091	0.011926263	0.033122027	0
0.003026828	0.003000001	0.055860016	0.015930158	0	0.003283325
0	0.003000001	0.360780103	0.000333498	0	0
	0.002354557	0.0175025	0.002730872		

Calculated		
DPM RUNEX	DPM VMT	DPM RUNEX*VMT
0.00489302	2708163	13251.10488
0.00104041	380450.3	395.8253278
0.00450855	1001.816	4.516736572
0.00385343	22959.51	88.4728836
0.00948729	313142.8	2970.877323
0.00706917	150864.5	1066.486683
0.00131225	143946.6	188.8935547
0.05312961	6458.508	343.138025
0.00270354	787270	2128.414047
0.00330371	25979.98	85.83039609
0.00598357	31989.05	191.4088038
0.01062406	21255.15	225.8160608
0.00455881	4593481	20940.78472

ATTACHMENT 2:

Comparison of Project Phasing (Annual Building Area Added) to Project Building Construction Schedule

Attachment 2.

Comparison of Project Phasing (Annual Building Area Added) to Project Building Construction Schedule.

Project Phase	Construction Year	Construction Area	Annual Building Area Added			Building Construction Schedule			Phase Average Building Activity Underestimated by	Annual Building Activity Underestimated by
			Million Square Feet	Cumulative Total (MMsf)	Percent of Total	Construction Months	Cumulative Total	Percent Completed		
Phase 1	2020	Plot 2	2.10	2.10		12	12			--
	2021	Plot 2	2.10	4.20		12	24			--
	2022	Plot 4	2.80	7.00		12	36			9.35%
	2023	Plot 4	2.80	9.80		12	48			9.35%
	2024	Plot 9	5.20	15.00		12	60			51.19%
	2025	Plot 9	5.20	20.20		12	72			51.19%
	2026	Plots 1, 3, 20	2.75	22.95	56.51%	12	84	43.75%	22.58%	7.70%
Phase 2	2027	Plots 5, 10	1.10	24.05		12	96			--
	2028	Plots 5, 10	2.20	26.25		12	108			--
	2029	Plots 7, 8, 21, 22	2.35	28.60		12	120			--
	2030	Plot 11	2.67	31.27		12	132			4.94%
	2031	Plot 11	2.67	33.94		12	144			4.94%
	2032	Plot 11	2.67	36.61		12	156			4.94%
	2033	Plot 12	1.75	38.36		12	168			--
	2034	Plot 12	1.75	40.11		12	180			--
	2035	Plot 6	0.50	40.61	100.00%	12	192	100.00%	--	--
Averages:			2.54			12				

Notes:

1. Annual Building Area Added values in the above table are derived from Revised Sections of the FEIR, Appendix A (Air Quality/GHG and Health Risk Assessment Technical Report – Revised), Sections 4.2 (Operations), Table 9 (Conceptual Operational Occupancy Schedule). Note that Table 9 presents square footage in terms of "occupancy" rather than "construction". Therefore, Table 9 indicates that a cumulative total 22.95 million square feet (56.51% of the project total square footage) will be available for occupancy by the beginning of 2027, meaning that a cumulative total 22.95 million square feet of project floor area will have been constructed by the end of 2026. The annual building area added values in the above table are intended to reflect construction activity, not occupancy. Therefore, "Annual Addition" values from Revised Sections of the FEIR Appendix A, Table 9, are advanced by one calendar day (January 1 to December 31 of the preceding year).

2. The Building Construction Schedule values in the above schedule are derived from Revised Sections of the FEIR, Appendix A (Air Quality/GHG and Health Risk Assessment Technical Report – Revised) CalEEMod2016.3.2 outputs at or about PDF pages 267 (Plots 2 and 4), 518 (Plots 9 and 1,3,20), 745 (Plots 5/10 and 7,8,21,22), 973 (Plot 11) and 1,188 (Plots 12 and 6).

3. The Phase Average Building Activity Underestimation Value reflects the percent by which the Phase 1 Building Construction Schedule (based on building construction months) falls below the Annual Building Area Added for Phase 1.
   is based,

4. The Annual Building Activity Underestimation Value reflects the percent by which the annual building construction activity (based on construction months) falls below the rate at which building area is added each year (based on million square feet). Since CalEEMod2016.3.2 annual construction activity emission estimates are based, in large part, on the above Building Construction Schedule, the Annual Building Activity Underestimation Values also provides a rough estimate of the extent to which annual construction activity emissions are underestimated. This is most pronounced in 2024 and 2025, when 5.2 million square feet are projected to be added, more than double the annual average of 2.54 million square feet of building area to be added over the life of the project.

ATTACHMENT 3:

Aggregate On-Road Motor Vehicle Carbon Monoxide Emission Factors by Speed for the South Coast Portion of Riverside County

Attachment 3.

Aggregate On-Road Motor Vehicle Carbon Monoxide Emission Factors by Speed for the South Coast Portion of Riverside County.

Vehicle Speed	CT-EMFAC2014 CO Emission Factors			EMFAC2017 CO Emission Factors			EMFAC2014 CO Emission Factors		
(miles per	2025	2035	2040	2025	2035	2040	2025	2035	2040
hour)	(grams/mile)	(grams/mile)	(grams/mile)	(grams/mile)	(grams/mile)	(grams/mile)	(grams/mile)	(grams/mile)	(grams/mile)
5 mph	1.401917	1.000279	0.928651	2.096174	1.907737	1.894984	2.283358	1.931521	1.861658
10 mph	1.210071	0.856984	0.792926	4.402650	4.574550	4.707155	4.679268	4.398747	4.378797
15 mph	1.027944	0.712723	0.654789	1.958146	1.706163	1.670004	1.568776	1.249748	1.184037
20 mph	0.893186	0.609084	0.556391	2.875373	2.397153	2.332767	1.370854	0.967664	0.893963
25 mph	0.793993	0.536150	0.487923	0.912846	0.665342	0.624423	0.890143	0.614104	0.557680
30 mph	0.715027	0.479277	0.434915	0.830081	0.602507	0.564643	0.805996	0.552427	0.500646
35 mph	0.650224	0.433118	0.392121	0.764054	0.556974	0.522390	0.741761	0.510003	0.462401
40 mph	0.596786	0.395407	0.357342	0.702353	0.508773	0.476820	0.681120	0.465851	0.422206
45 mph	0.552870	0.364649	0.329128	0.644830	0.466770	0.437098	0.626108	0.428670	0.388523
50 mph	0.517361	0.339915	0.306584	0.600463	0.429643	0.401896	0.583582	0.395809	0.358800
55 mph	0.489805	0.320780	0.289301	0.560750	0.402028	0.375837	0.545133	0.370881	0.336429
60 mph	0.471800	0.308664	0.278713	0.539378	0.380573	0.355647	0.523048	0.351371	0.319145
65 mph	0.464123	0.303877	0.275095	0.501166	0.356705	0.332939	0.484873	0.329584	0.299964
70 mph	0.464506	0.304277	0.275913	0.486278	0.344701	0.321477	0.466572	0.316012	0.287900
75 mph	0.464506	0.304277	0.275913	N/A	N/A	N/A	N/A	N/A	N/A

Notes:

1. CT-EMFAC2014 CO (carbon monoxide) emisson factors for 2025 are from *Revised Sections of the Final Environmental Impact Report for the World Logistics Center* (State Clearinghouse No. 2012021045), Appendix A (Air Quality/GHG and Health Risk Assessment Technical Report - Revised), City of Moreno Valley, July 25, 2018, available at http://www.moval.org/cdd/pdfs/projects/wlc/FEIR-Revision2018/zz-FEIR-Appendicespdf.pdf (accessed August 30, 2018), on or about page 4,027 of the PDF document. Documentation presented for the buildout year CT-EMFAC2014 run (as well as for the buildout year CALINE4 model runs) in the document is garbled and unintelligible. The Revised Sections of the FEIR document implies that the documentation should be for 2040, but the runs are labled "2050", not "2040".

2. CT-EMFAC2014 CO emission factors for 2035 and 2040, above, were derived from the CT-EMFAC2014 Version 6.0 model, which is available from Caltrans at http://www.dot.ca.gov/env/air/ctemfac-license.html (accessed August 31, 2018).

3. EMFAC2017 emission factors (the most recent on-road vehicle emission factors available from the California Air Resources Board) were derived from emission rates (in grams per mile) for the South Coast portion of Riverside County. EMFAC2014 emission rates were obtained from the CARB EMFAC2014 (v.1.0.7) Web Database, available at https://www.arb.ca.gov/emfac/2017/ (accessed August 31, 2018). Selected options: Data Type - Emission Factors; Region - Riverside (SC) Subarea; Season - Annual; Vehicle Category - EMFAC2007 Categories-All; Model Year - Aggregated; Speed - 5 to 75 miles per hour (no data reported for 75 mph); Fuel - All. Files were downloaded in .CSV (comma separated values) format for import to Microsoft Excel to aggregate emission factor data by vehicle category and fuel based on vehicle mileage.

4. EMFAC2014 emission factors above were derived from emission rates in a similar fashion as described for EMFAC2017 emission factors, above. EMFAC2014 emission rates were obtained from the CARB EMFAC2014 (v.1.0.7) Web Database, available at https://www.arb.ca.gov/emfac/2014/ (accessed August 31, 2018).

File Name:	Riverside (SC) - 2025 - Annual.EF
CT-EMFAC Version:	6.0.0.18677
Run Date:	9/3/18 1:46
Area:	Riverside (SC)
Analysis Year:	2025
Season:	Annual

===

Vehicle Category	VMT Fraction Across Category	Diesel VMT Fraction Within Category
Truck 1	0.017	0.616
Truck 2	0.064	0.981
Non-Truck	0.919	0.012

===

Fleet Average Running Exhaust Emission Factors (grams/veh-mile)

Speed	CO
5 mph	1.401917
10 mph	1.210071
15 mph	1.027944
20 mph	0.893186
25 mph	0.793993
30 mph	0.715027
35 mph	0.650224
40 mph	0.596786
45 mph	0.55287
50 mph	0.517361
55 mph	0.489805
60 mph	0.4718
65 mph	0.464123
70 mph	0.464506
75 mph	0.464506

===

Fleet Average Idling Exhaust Emission Factors (grams/veh-idle hour)

Pollutant Name	Emission Factor
CO	4.019755

===

Fleet Average Running Loss Emission Factors (grams/hour)

    Pollutant Name   Emission Factor

==

Fleet Average Tire Wear Factors (grams/veh-mile)

    Pollutant Name   Emission Factor

==

Fleet Average Brake Wear Factors (grams/veh-mile)

    Pollutant Name   Emission Factor

===========================END=======================================

File Name:	Riverside (SC) - 2035 - Annual.EF
CT-EMFAC Version:	6.0.0.18677
Run Date:	9/3/18 1:52
Area:	Riverside (SC)
Analysis Year:	2035
Season:	Annual

===

Vehicle Category	VMT Fraction Across Category	Diesel VMT Fraction Within Category
Truck 1	0.013	0.663
Truck 2	0.064	0.981
Non-Truck	0.923	0.012

===

Fleet Average Running Exhaust Emission Factors (grams/veh-mile)

Speed	CO
5 mph	1.000279
10 mph	0.856984
15 mph	0.712723
20 mph	0.609084
25 mph	0.53615
30 mph	0.479277
35 mph	0.433118
40 mph	0.395407
45 mph	0.364649
50 mph	0.339915
55 mph	0.32078
60 mph	0.308664
65 mph	0.303877
70 mph	0.304277
75 mph	0.304277

===

Fleet Average Idling Exhaust Emission Factors (grams/veh-idle hour)

Pollutant Name	Emission Factor
CO	2.763235

===

Fleet Average Running Loss Emission Factors (grams/hour)

    Pollutant Name   Emission Factor

==

Fleet Average Tire Wear Factors (grams/veh-mile)

    Pollutant Name   Emission Factor

==

Fleet Average Brake Wear Factors (grams/veh-mile)

    Pollutant Name   Emission Factor

==========================END=======================================

File Name:	Riverside (SC) - 2040 - Annual.EF
CT-EMFAC Version:	6.0.0.18677
Run Date:	9/3/18 1:50
Area:	Riverside (SC)
Analysis Year:	2040
Season:	Annual

==

Vehicle Category	VMT Fraction Across Category	Diesel VMT Fraction Within Category
Truck 1	0.012	0.67
Truck 2	0.065	0.981
Non-Truck	0.923	0.012

==

Fleet Average Running Exhaust Emission Factors (grams/veh-mile)

Speed	CO
5 mph	0.928651
10 mph	0.792926
15 mph	0.654789
20 mph	0.556391
25 mph	0.487923
30 mph	0.434915
35 mph	0.392121
40 mph	0.357342
45 mph	0.329128
50 mph	0.306584
55 mph	0.289301
60 mph	0.278713
65 mph	0.275095
70 mph	0.275913
75 mph	0.275913

==

Fleet Average Idling Exhaust Emission Factors (grams/veh-idle hour)

Pollutant Name	Emission Factor
CO	2.518074

==

Fleet Average Running Loss Emission Factors (grams/hour)

    Pollutant Name   Emission Factor

==

Fleet Average Tire Wear Factors (grams/veh-mile)

    Pollutant Name   Emission Factor

==

Fleet Average Brake Wear Factors (grams/veh-mile)

    Pollutant Name   Emission Factor

==========================END==

EMFAC2017 (v1.0.2) Emission Rates
Region Type: Sub-Area
Region: Riverside (SC)
Calendar Year: 2025
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, g/mile for RUNEX, PMBW and PMTW

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	VMT
Riverside (SC)	2025	HHDT	Aggregated	5	GAS	1.338344035
Riverside (SC)	2025	HHDT	Aggregated	5	DSL	4359.756525
Riverside (SC)	2025	HHDT	Aggregated	5	NG	795.3434435
Riverside (SC)	2025	HHDT	Aggregated	10	GAS	0.365217405
Riverside (SC)	2025	HHDT	Aggregated	10	DSL	1327.412464
Riverside (SC)	2025	HHDT	Aggregated	10	NG	1911.41199
Riverside (SC)	2025	HHDT	Aggregated	15	GAS	1.104694211
Riverside (SC)	2025	HHDT	Aggregated	15	DSL	3476.709875
Riverside (SC)	2025	HHDT	Aggregated	15	NG	873.5531632
Riverside (SC)	2025	HHDT	Aggregated	20	GAS	2.946360303
Riverside (SC)	2025	HHDT	Aggregated	20	DSL	55984.4709
Riverside (SC)	2025	HHDT	Aggregated	20	NG	802.5305346
Riverside (SC)	2025	HHDT	Aggregated	25	GAS	10.90485535
Riverside (SC)	2025	HHDT	Aggregated	25	DSL	37420.79616
Riverside (SC)	2025	HHDT	Aggregated	25	NG	1159.610573
Riverside (SC)	2025	HHDT	Aggregated	30	GAS	26.25560104
Riverside (SC)	2025	HHDT	Aggregated	30	DSL	89621.93088
Riverside (SC)	2025	HHDT	Aggregated	30	NG	1302.522756
Riverside (SC)	2025	HHDT	Aggregated	35	GAS	32.65492798
Riverside (SC)	2025	HHDT	Aggregated	35	DSL	111675.0262
Riverside (SC)	2025	HHDT	Aggregated	35	NG	3218.856645
Riverside (SC)	2025	HHDT	Aggregated	40	GAS	30.60414651
Riverside (SC)	2025	HHDT	Aggregated	40	DSL	109406.1848
Riverside (SC)	2025	HHDT	Aggregated	40	NG	2317.011884
Riverside (SC)	2025	HHDT	Aggregated	45	GAS	34.60844991
Riverside (SC)	2025	HHDT	Aggregated	45	DSL	121001.0014
Riverside (SC)	2025	HHDT	Aggregated	45	NG	1889.897326
Riverside (SC)	2025	HHDT	Aggregated	50	GAS	70.40080801
Riverside (SC)	2025	HHDT	Aggregated	50	DSL	222769.0028
Riverside (SC)	2025	HHDT	Aggregated	50	NG	657.809927
Riverside (SC)	2025	HHDT	Aggregated	55	GAS	80.62480529
Riverside (SC)	2025	HHDT	Aggregated	55	DSL	264777.9644
Riverside (SC)	2025	HHDT	Aggregated	55	NG	0
Riverside (SC)	2025	HHDT	Aggregated	60	GAS	117.6343763
Riverside (SC)	2025	HHDT	Aggregated	60	DSL	442213.0298
Riverside (SC)	2025	HHDT	Aggregated	60	NG	0

Riverside (SC)	2025	HHDT	Aggregated	65	GAS	66.46201506
Riverside (SC)	2025	HHDT	Aggregated	65	DSL	480251.9001
Riverside (SC)	2025	HHDT	Aggregated	65	NG	0
Riverside (SC)	2025	HHDT	Aggregated	70	GAS	13.45394876
Riverside (SC)	2025	HHDT	Aggregated	70	DSL	129656.3953
Riverside (SC)	2025	HHDT	Aggregated	70	NG	0
Riverside (SC)	2025	HHDT	Aggregated	75	DSL	0
Riverside (SC)	2025	HHDT	Aggregated	75	NG	0
Riverside (SC)	2025	LDA	Aggregated	5	GAS	49506.44305
Riverside (SC)	2025	LDA	Aggregated	5	DSL	546.3274599
Riverside (SC)	2025	LDA	Aggregated	10	GAS	19514.30695
Riverside (SC)	2025	LDA	Aggregated	10	DSL	215.3497826
Riverside (SC)	2025	LDA	Aggregated	15	GAS	74015.63154
Riverside (SC)	2025	LDA	Aggregated	15	DSL	816.7981676
Riverside (SC)	2025	LDA	Aggregated	20	GAS	208776.8621
Riverside (SC)	2025	LDA	Aggregated	20	DSL	2303.953298
Riverside (SC)	2025	LDA	Aggregated	25	GAS	1352905.572
Riverside (SC)	2025	LDA	Aggregated	25	DSL	14929.96505
Riverside (SC)	2025	LDA	Aggregated	30	GAS	2831149.8
Riverside (SC)	2025	LDA	Aggregated	30	DSL	31243.10259
Riverside (SC)	2025	LDA	Aggregated	35	GAS	3218570.652
Riverside (SC)	2025	LDA	Aggregated	35	DSL	35518.47841
Riverside (SC)	2025	LDA	Aggregated	40	GAS	2619010.753
Riverside (SC)	2025	LDA	Aggregated	40	DSL	28902.04595
Riverside (SC)	2025	LDA	Aggregated	45	GAS	2184955.828
Riverside (SC)	2025	LDA	Aggregated	45	DSL	24112.04065
Riverside (SC)	2025	LDA	Aggregated	50	GAS	2982592.161
Riverside (SC)	2025	LDA	Aggregated	50	DSL	32914.34203
Riverside (SC)	2025	LDA	Aggregated	55	GAS	2557828.084
Riverside (SC)	2025	LDA	Aggregated	55	DSL	28226.86571
Riverside (SC)	2025	LDA	Aggregated	60	GAS	3692823.104
Riverside (SC)	2025	LDA	Aggregated	60	DSL	40752.0828
Riverside (SC)	2025	LDA	Aggregated	65	GAS	2570791.997
Riverside (SC)	2025	LDA	Aggregated	65	DSL	28369.92874
Riverside (SC)	2025	LDA	Aggregated	70	GAS	457027.3099
Riverside (SC)	2025	LDA	Aggregated	70	DSL	5043.516639
Riverside (SC)	2025	LDT1	Aggregated	5	GAS	4762.579704
Riverside (SC)	2025	LDT1	Aggregated	5	DSL	0.998935569
Riverside (SC)	2025	LDT1	Aggregated	10	GAS	1877.299933
Riverside (SC)	2025	LDT1	Aggregated	10	DSL	0.393757542
Riverside (SC)	2025	LDT1	Aggregated	15	GAS	7120.393283
Riverside (SC)	2025	LDT1	Aggregated	15	DSL	1.493479282
Riverside (SC)	2025	LDT1	Aggregated	20	GAS	20084.58667
Riverside (SC)	2025	LDT1	Aggregated	20	DSL	4.212676586
Riverside (SC)	2025	LDT1	Aggregated	25	GAS	130151.1525

Riverside (SC)	2025	LDT1	Aggregated	25	DSL	27.29877999
Riverside (SC)	2025	LDT1	Aggregated	30	GAS	272360.0353
Riverside (SC)	2025	LDT1	Aggregated	30	DSL	57.12662963
Riverside (SC)	2025	LDT1	Aggregated	35	GAS	309630.3899
Riverside (SC)	2025	LDT1	Aggregated	35	DSL	64.94396501
Riverside (SC)	2025	LDT1	Aggregated	40	GAS	251952.0023
Riverside (SC)	2025	LDT1	Aggregated	40	DSL	52.84611123
Riverside (SC)	2025	LDT1	Aggregated	45	GAS	210195.3935
Riverside (SC)	2025	LDT1	Aggregated	45	DSL	44.08779864
Riverside (SC)	2025	LDT1	Aggregated	50	GAS	286928.9736
Riverside (SC)	2025	LDT1	Aggregated	50	DSL	60.18241695
Riverside (SC)	2025	LDT1	Aggregated	55	GAS	246066.1556
Riverside (SC)	2025	LDT1	Aggregated	55	DSL	51.61157407
Riverside (SC)	2025	LDT1	Aggregated	60	GAS	355254.0494
Riverside (SC)	2025	LDT1	Aggregated	60	DSL	74.51337889
Riverside (SC)	2025	LDT1	Aggregated	65	GAS	247313.2997
Riverside (SC)	2025	LDT1	Aggregated	65	DSL	51.87315847
Riverside (SC)	2025	LDT1	Aggregated	70	GAS	43966.58002
Riverside (SC)	2025	LDT1	Aggregated	70	DSL	9.221846847
Riverside (SC)	2025	LDT2	Aggregated	5	GAS	14914.02358
Riverside (SC)	2025	LDT2	Aggregated	5	DSL	119.7570226
Riverside (SC)	2025	LDT2	Aggregated	10	GAS	5878.766807
Riverside (SC)	2025	LDT2	Aggregated	10	DSL	47.2054778
Riverside (SC)	2025	LDT2	Aggregated	15	GAS	22297.5194
Riverside (SC)	2025	LDT2	Aggregated	15	DSL	179.0452133
Riverside (SC)	2025	LDT2	Aggregated	20	GAS	62894.90525
Riverside (SC)	2025	LDT2	Aggregated	20	DSL	505.0351801
Riverside (SC)	2025	LDT2	Aggregated	25	GAS	407568.4771
Riverside (SC)	2025	LDT2	Aggregated	25	DSL	3272.704179
Riverside (SC)	2025	LDT2	Aggregated	30	GAS	852895.7503
Riverside (SC)	2025	LDT2	Aggregated	30	DSL	6848.604942
Riverside (SC)	2025	LDT2	Aggregated	35	GAS	969607.9065
Riverside (SC)	2025	LDT2	Aggregated	35	DSL	7785.783313
Riverside (SC)	2025	LDT2	Aggregated	40	GAS	788987.9725
Riverside (SC)	2025	LDT2	Aggregated	40	DSL	6335.436571
Riverside (SC)	2025	LDT2	Aggregated	45	GAS	658227.1061
Riverside (SC)	2025	LDT2	Aggregated	45	DSL	5285.449494
Riverside (SC)	2025	LDT2	Aggregated	50	GAS	898518.3966
Riverside (SC)	2025	LDT2	Aggregated	50	DSL	7214.946878
Riverside (SC)	2025	LDT2	Aggregated	55	GAS	770556.437
Riverside (SC)	2025	LDT2	Aggregated	55	DSL	6187.434538
Riverside (SC)	2025	LDT2	Aggregated	60	GAS	1112478.447
Riverside (SC)	2025	LDT2	Aggregated	60	DSL	8933.008969
Riverside (SC)	2025	LDT2	Aggregated	65	GAS	774461.8701
Riverside (SC)	2025	LDT2	Aggregated	65	DSL	6218.794488

Riverside (SC)	2025	LDT2	Aggregated	70	GAS	137681.3937
Riverside (SC)	2025	LDT2	Aggregated	70	DSL	1105.557711
Riverside (SC)	2025	LHDT1	Aggregated	5	GAS	1268.579861
Riverside (SC)	2025	LHDT1	Aggregated	5	DSL	1035.616835
Riverside (SC)	2025	LHDT1	Aggregated	10	GAS	341.1584396
Riverside (SC)	2025	LHDT1	Aggregated	10	DSL	247.6276444
Riverside (SC)	2025	LHDT1	Aggregated	15	GAS	1061.5705
Riverside (SC)	2025	LHDT1	Aggregated	15	DSL	716.5905908
Riverside (SC)	2025	LHDT1	Aggregated	20	GAS	2955.303069
Riverside (SC)	2025	LHDT1	Aggregated	20	DSL	2632.148222
Riverside (SC)	2025	LHDT1	Aggregated	25	GAS	10615.24005
Riverside (SC)	2025	LHDT1	Aggregated	25	DSL	8960.846762
Riverside (SC)	2025	LHDT1	Aggregated	30	GAS	25392.31296
Riverside (SC)	2025	LHDT1	Aggregated	30	DSL	21597.49563
Riverside (SC)	2025	LHDT1	Aggregated	35	GAS	30830.20379
Riverside (SC)	2025	LHDT1	Aggregated	35	DSL	25744.99502
Riverside (SC)	2025	LHDT1	Aggregated	40	GAS	30051.13157
Riverside (SC)	2025	LHDT1	Aggregated	40	DSL	27717.46935
Riverside (SC)	2025	LHDT1	Aggregated	45	GAS	35037.76763
Riverside (SC)	2025	LHDT1	Aggregated	45	DSL	29970.39833
Riverside (SC)	2025	LHDT1	Aggregated	50	GAS	68930.68647
Riverside (SC)	2025	LHDT1	Aggregated	50	DSL	53259.41657
Riverside (SC)	2025	LHDT1	Aggregated	55	GAS	73019.56846
Riverside (SC)	2025	LHDT1	Aggregated	55	DSL	57109.91054
Riverside (SC)	2025	LHDT1	Aggregated	60	GAS	102623.3302
Riverside (SC)	2025	LHDT1	Aggregated	60	DSL	100691.2887
Riverside (SC)	2025	LHDT1	Aggregated	65	GAS	74788.43429
Riverside (SC)	2025	LHDT1	Aggregated	65	DSL	141416.6528
Riverside (SC)	2025	LHDT1	Aggregated	70	GAS	17464.81695
Riverside (SC)	2025	LHDT1	Aggregated	70	DSL	40319.40599
Riverside (SC)	2025	LHDT2	Aggregated	5	GAS	192.0092966
Riverside (SC)	2025	LHDT2	Aggregated	5	DSL	405.1086101
Riverside (SC)	2025	LHDT2	Aggregated	10	GAS	51.63694779
Riverside (SC)	2025	LHDT2	Aggregated	10	DSL	96.86602951
Riverside (SC)	2025	LHDT2	Aggregated	15	GAS	160.6768414
Riverside (SC)	2025	LHDT2	Aggregated	15	DSL	280.3131511
Riverside (SC)	2025	LHDT2	Aggregated	20	GAS	447.3077977
Riverside (SC)	2025	LHDT2	Aggregated	20	DSL	1029.633617
Riverside (SC)	2025	LHDT2	Aggregated	25	GAS	1606.69804
Riverside (SC)	2025	LHDT2	Aggregated	25	DSL	3505.26957
Riverside (SC)	2025	LHDT2	Aggregated	30	GAS	3843.32142
Riverside (SC)	2025	LHDT2	Aggregated	30	DSL	8448.425269
Riverside (SC)	2025	LHDT2	Aggregated	35	GAS	4666.387926
Riverside (SC)	2025	LHDT2	Aggregated	35	DSL	10070.82813
Riverside (SC)	2025	LHDT2	Aggregated	40	GAS	4548.469367

Riverside (SC)	2025	LHDT2	Aggregated	40	DSL	10842.41305
Riverside (SC)	2025	LHDT2	Aggregated	45	GAS	5303.235
Riverside (SC)	2025	LHDT2	Aggregated	45	DSL	11723.70515
Riverside (SC)	2025	LHDT2	Aggregated	50	GAS	10433.18835
Riverside (SC)	2025	LHDT2	Aggregated	50	DSL	20833.81372
Riverside (SC)	2025	LHDT2	Aggregated	55	GAS	11052.07202
Riverside (SC)	2025	LHDT2	Aggregated	55	DSL	22340.03515
Riverside (SC)	2025	LHDT2	Aggregated	60	GAS	15532.82852
Riverside (SC)	2025	LHDT2	Aggregated	60	DSL	39388.03102
Riverside (SC)	2025	LHDT2	Aggregated	65	GAS	11319.80344
Riverside (SC)	2025	LHDT2	Aggregated	65	DSL	55318.82231
Riverside (SC)	2025	LHDT2	Aggregated	70	GAS	2643.434066
Riverside (SC)	2025	LHDT2	Aggregated	70	DSL	15771.99016
Riverside (SC)	2025	MCY	Aggregated	5	GAS	351.7371669
Riverside (SC)	2025	MCY	Aggregated	10	GAS	138.6467421
Riverside (SC)	2025	MCY	Aggregated	15	GAS	525.8719258
Riverside (SC)	2025	MCY	Aggregated	20	GAS	1483.333834
Riverside (SC)	2025	MCY	Aggregated	25	GAS	9612.227087
Riverside (SC)	2025	MCY	Aggregated	30	GAS	20114.96986
Riverside (SC)	2025	MCY	Aggregated	35	GAS	22867.54719
Riverside (SC)	2025	MCY	Aggregated	40	GAS	18607.74811
Riverside (SC)	2025	MCY	Aggregated	45	GAS	15523.84145
Riverside (SC)	2025	MCY	Aggregated	50	GAS	21190.94914
Riverside (SC)	2025	MCY	Aggregated	55	GAS	18173.05281
Riverside (SC)	2025	MCY	Aggregated	60	GAS	26237.05232
Riverside (SC)	2025	MCY	Aggregated	65	GAS	18265.1598
Riverside (SC)	2025	MCY	Aggregated	70	GAS	3247.122622
Riverside (SC)	2025	MDV	Aggregated	5	GAS	10839.90613
Riverside (SC)	2025	MDV	Aggregated	5	DSL	309.4036368
Riverside (SC)	2025	MDV	Aggregated	10	GAS	4272.842939
Riverside (SC)	2025	MDV	Aggregated	10	DSL	121.9598333
Riverside (SC)	2025	MDV	Aggregated	15	GAS	16206.42585
Riverside (SC)	2025	MDV	Aggregated	15	DSL	462.5803061
Riverside (SC)	2025	MDV	Aggregated	20	GAS	45713.67783
Riverside (SC)	2025	MDV	Aggregated	20	DSL	1304.806333
Riverside (SC)	2025	MDV	Aggregated	25	GAS	296231.5307
Riverside (SC)	2025	MDV	Aggregated	25	DSL	8455.341938
Riverside (SC)	2025	MDV	Aggregated	30	GAS	619907.1514
Riverside (SC)	2025	MDV	Aggregated	30	DSL	17694.02103
Riverside (SC)	2025	MDV	Aggregated	35	GAS	704736.6283
Riverside (SC)	2025	MDV	Aggregated	35	DSL	20115.31032
Riverside (SC)	2025	MDV	Aggregated	40	GAS	573457.2911
Riverside (SC)	2025	MDV	Aggregated	40	DSL	16368.20183
Riverside (SC)	2025	MDV	Aggregated	45	GAS	478416.8407
Riverside (SC)	2025	MDV	Aggregated	45	DSL	13655.46054

Riverside (SC)	2025	MDV	Aggregated	50	GAS	653066.8954
Riverside (SC)	2025	MDV	Aggregated	50	DSL	18640.5002
Riverside (SC)	2025	MDV	Aggregated	55	GAS	560060.7644
Riverside (SC)	2025	MDV	Aggregated	55	DSL	15985.82453
Riverside (SC)	2025	MDV	Aggregated	60	GAS	808578.7092
Riverside (SC)	2025	MDV	Aggregated	60	DSL	23079.27672
Riverside (SC)	2025	MDV	Aggregated	65	GAS	562899.3363
Riverside (SC)	2025	MDV	Aggregated	65	DSL	16066.84593
Riverside (SC)	2025	MDV	Aggregated	70	GAS	100070.4723
Riverside (SC)	2025	MDV	Aggregated	70	DSL	2856.313301
Riverside (SC)	2025	MH	Aggregated	5	GAS	89.81688798
Riverside (SC)	2025	MH	Aggregated	5	DSL	36.33903516
Riverside (SC)	2025	MH	Aggregated	10	GAS	24.50990918
Riverside (SC)	2025	MH	Aggregated	10	DSL	9.644835128
Riverside (SC)	2025	MH	Aggregated	15	GAS	74.1365401
Riverside (SC)	2025	MH	Aggregated	15	DSL	26.49903099
Riverside (SC)	2025	MH	Aggregated	20	GAS	197.7316044
Riverside (SC)	2025	MH	Aggregated	20	DSL	78.76744601
Riverside (SC)	2025	MH	Aggregated	25	GAS	731.8298924
Riverside (SC)	2025	MH	Aggregated	25	DSL	287.9556576
Riverside (SC)	2025	MH	Aggregated	30	GAS	1762.025544
Riverside (SC)	2025	MH	Aggregated	30	DSL	701.8210504
Riverside (SC)	2025	MH	Aggregated	35	GAS	2191.487339
Riverside (SC)	2025	MH	Aggregated	35	DSL	877.5113391
Riverside (SC)	2025	MH	Aggregated	40	GAS	2053.858445
Riverside (SC)	2025	MH	Aggregated	40	DSL	844.8994837
Riverside (SC)	2025	MH	Aggregated	45	GAS	2322.5891
Riverside (SC)	2025	MH	Aggregated	45	DSL	885.5497331
Riverside (SC)	2025	MH	Aggregated	50	GAS	4724.630827
Riverside (SC)	2025	MH	Aggregated	50	DSL	1789.612966
Riverside (SC)	2025	MH	Aggregated	55	GAS	5410.76802
Riverside (SC)	2025	MH	Aggregated	55	DSL	2173.221905
Riverside (SC)	2025	MH	Aggregated	60	GAS	7894.497466
Riverside (SC)	2025	MH	Aggregated	60	DSL	3574.971298
Riverside (SC)	2025	MH	Aggregated	65	GAS	4460.296609
Riverside (SC)	2025	MH	Aggregated	65	DSL	2599.301782
Riverside (SC)	2025	MH	Aggregated	70	GAS	902.9007316
Riverside (SC)	2025	MH	Aggregated	70	DSL	604.3871491
Riverside (SC)	2025	MHDT	Aggregated	5	GAS	159.6857712
Riverside (SC)	2025	MHDT	Aggregated	5	DSL	1914.180082
Riverside (SC)	2025	MHDT	Aggregated	10	GAS	43.57625652
Riverside (SC)	2025	MHDT	Aggregated	10	DSL	508.0473715
Riverside (SC)	2025	MHDT	Aggregated	15	GAS	131.8076238
Riverside (SC)	2025	MHDT	Aggregated	15	DSL	1395.852066
Riverside (SC)	2025	MHDT	Aggregated	20	GAS	351.5477373

Riverside (SC)	2025	MHDT	Aggregated	20	DSL	4149.121616
Riverside (SC)	2025	MHDT	Aggregated	25	GAS	1301.123023
Riverside (SC)	2025	MHDT	Aggregated	25	DSL	15168.23388
Riverside (SC)	2025	MHDT	Aggregated	30	GAS	3132.711613
Riverside (SC)	2025	MHDT	Aggregated	30	DSL	36968.83723
Riverside (SC)	2025	MHDT	Aggregated	35	GAS	3896.253296
Riverside (SC)	2025	MHDT	Aggregated	35	DSL	46223.42667
Riverside (SC)	2025	MHDT	Aggregated	40	GAS	3651.562385
Riverside (SC)	2025	MHDT	Aggregated	40	DSL	44505.57798
Riverside (SC)	2025	MHDT	Aggregated	45	GAS	4129.339593
Riverside (SC)	2025	MHDT	Aggregated	45	DSL	46646.85381
Riverside (SC)	2025	MHDT	Aggregated	50	GAS	8399.938301
Riverside (SC)	2025	MHDT	Aggregated	50	DSL	94268.91713
Riverside (SC)	2025	MHDT	Aggregated	55	GAS	9619.824106
Riverside (SC)	2025	MHDT	Aggregated	55	DSL	114475.744
Riverside (SC)	2025	MHDT	Aggregated	60	GAS	14035.65571
Riverside (SC)	2025	MHDT	Aggregated	60	DSL	188313.7189
Riverside (SC)	2025	MHDT	Aggregated	65	GAS	7929.977534
Riverside (SC)	2025	MHDT	Aggregated	65	DSL	136919.7525
Riverside (SC)	2025	MHDT	Aggregated	70	GAS	1605.270489
Riverside (SC)	2025	MHDT	Aggregated	70	DSL	31836.44909
Riverside (SC)	2025	MHDT	Aggregated	75	DSL	0
Riverside (SC)	2025	OBUS	Aggregated	5	GAS	39.60282048
Riverside (SC)	2025	OBUS	Aggregated	5	DSL	39.46021281
Riverside (SC)	2025	OBUS	Aggregated	10	GAS	10.80711607
Riverside (SC)	2025	OBUS	Aggregated	10	DSL	10.24489959
Riverside (SC)	2025	OBUS	Aggregated	15	GAS	32.68890912
Riverside (SC)	2025	OBUS	Aggregated	15	DSL	29.51532673
Riverside (SC)	2025	OBUS	Aggregated	20	GAS	87.18548824
Riverside (SC)	2025	OBUS	Aggregated	20	DSL	88.49011437
Riverside (SC)	2025	OBUS	Aggregated	25	GAS	322.6846142
Riverside (SC)	2025	OBUS	Aggregated	25	DSL	323.2334755
Riverside (SC)	2025	OBUS	Aggregated	30	GAS	776.927178
Riverside (SC)	2025	OBUS	Aggregated	30	DSL	783.8494809
Riverside (SC)	2025	OBUS	Aggregated	35	GAS	966.2890978
Riverside (SC)	2025	OBUS	Aggregated	35	DSL	978.2855233
Riverside (SC)	2025	OBUS	Aggregated	40	GAS	905.604604
Riverside (SC)	2025	OBUS	Aggregated	40	DSL	947.7330605
Riverside (SC)	2025	OBUS	Aggregated	45	GAS	1024.095593
Riverside (SC)	2025	OBUS	Aggregated	45	DSL	1011.972142
Riverside (SC)	2025	OBUS	Aggregated	50	GAS	2083.224109
Riverside (SC)	2025	OBUS	Aggregated	50	DSL	1983.155161
Riverside (SC)	2025	OBUS	Aggregated	55	GAS	2385.761513
Riverside (SC)	2025	OBUS	Aggregated	55	DSL	2391.890576
Riverside (SC)	2025	OBUS	Aggregated	60	GAS	3480.908468

Riverside (SC)	2025	OBUS	Aggregated	60	DSL	3954.025162
Riverside (SC)	2025	OBUS	Aggregated	65	GAS	1966.671634
Riverside (SC)	2025	OBUS	Aggregated	65	DSL	3336.518591
Riverside (SC)	2025	OBUS	Aggregated	70	GAS	398.1146128
Riverside (SC)	2025	OBUS	Aggregated	70	DSL	828.1194143
Riverside (SC)	2025	OBUS	Aggregated	75	DSL	0
Riverside (SC)	2025	SBUS	Aggregated	5	GAS	151.2930034
Riverside (SC)	2025	SBUS	Aggregated	5	DSL	287.8121158
Riverside (SC)	2025	SBUS	Aggregated	10	GAS	530.2742225
Riverside (SC)	2025	SBUS	Aggregated	10	DSL	1008.766714
Riverside (SC)	2025	SBUS	Aggregated	15	GAS	1060.548445
Riverside (SC)	2025	SBUS	Aggregated	15	DSL	2017.533428
Riverside (SC)	2025	SBUS	Aggregated	20	GAS	1439.522025
Riverside (SC)	2025	SBUS	Aggregated	20	DSL	2738.473493
Riverside (SC)	2025	SBUS	Aggregated	25	GAS	2272.382254
Riverside (SC)	2025	SBUS	Aggregated	25	DSL	4322.864439
Riverside (SC)	2025	SBUS	Aggregated	30	GAS	2726.261264
Riverside (SC)	2025	SBUS	Aggregated	30	DSL	5186.300786
Riverside (SC)	2025	SBUS	Aggregated	35	GAS	2798.164213
Riverside (SC)	2025	SBUS	Aggregated	35	DSL	5323.0853
Riverside (SC)	2025	SBUS	Aggregated	40	GAS	1888.908772
Riverside (SC)	2025	SBUS	Aggregated	40	DSL	3593.363987
Riverside (SC)	2025	SBUS	Aggregated	45	GAS	906.2529599
Riverside (SC)	2025	SBUS	Aggregated	45	DSL	1724.009544
Riverside (SC)	2025	SBUS	Aggregated	50	GAS	453.8790103
Riverside (SC)	2025	SBUS	Aggregated	50	DSL	863.4363473
Riverside (SC)	2025	SBUS	Aggregated	55	GAS	675.5699022
Riverside (SC)	2025	SBUS	Aggregated	55	DSL	1285.169826
Riverside (SC)	2025	SBUS	Aggregated	60	GAS	375.986377
Riverside (SC)	2025	SBUS	Aggregated	60	DSL	715.2573629
Riverside (SC)	2025	SBUS	Aggregated	65	DSL	0
Riverside (SC)	2025	SBUS	Aggregated	70	DSL	0
Riverside (SC)	2025	SBUS	Aggregated	75	DSL	0
Riverside (SC)	2025	UBUS	Aggregated	5	GAS	164.3844143
Riverside (SC)	2025	UBUS	Aggregated	5	DSL	0.163300718
Riverside (SC)	2025	UBUS	Aggregated	5	NG	382.8683386
Riverside (SC)	2025	UBUS	Aggregated	10	GAS	405.622084
Riverside (SC)	2025	UBUS	Aggregated	10	DSL	0.507417854
Riverside (SC)	2025	UBUS	Aggregated	10	NG	1189.671624
Riverside (SC)	2025	UBUS	Aggregated	15	GAS	722.7497618
Riverside (SC)	2025	UBUS	Aggregated	15	DSL	0.887143459
Riverside (SC)	2025	UBUS	Aggregated	15	NG	2079.961103
Riverside (SC)	2025	UBUS	Aggregated	20	GAS	6629.777409
Riverside (SC)	2025	UBUS	Aggregated	20	DSL	8.388093221
Riverside (SC)	2025	UBUS	Aggregated	20	NG	19666.38818

Riverside (SC)	2025	UBUS	Aggregated	25	GAS	341.9948942
Riverside (SC)	2025	UBUS	Aggregated	25	DSL	0.037863118
Riverside (SC)	2025	UBUS	Aggregated	25	NG	88.77235258
Riverside (SC)	2025	UBUS	Aggregated	30	GAS	818.3245794
Riverside (SC)	2025	UBUS	Aggregated	30	DSL	0.090598779
Riverside (SC)	2025	UBUS	Aggregated	30	NG	212.4142767
Riverside (SC)	2025	UBUS	Aggregated	35	GAS	997.249944
Riverside (SC)	2025	UBUS	Aggregated	35	DSL	0.110408057
Riverside (SC)	2025	UBUS	Aggregated	35	NG	258.8583197
Riverside (SC)	2025	UBUS	Aggregated	40	GAS	973.2369446
Riverside (SC)	2025	UBUS	Aggregated	40	DSL	0.107749518
Riverside (SC)	2025	UBUS	Aggregated	40	NG	252.6252136
Riverside (SC)	2025	UBUS	Aggregated	45	GAS	1126.554233
Riverside (SC)	2025	UBUS	Aggregated	45	DSL	0.124723662
Riverside (SC)	2025	UBUS	Aggregated	45	NG	292.422113
Riverside (SC)	2025	UBUS	Aggregated	50	GAS	2191.980275
Riverside (SC)	2025	UBUS	Aggregated	50	DSL	0.242679667
Riverside (SC)	2025	UBUS	Aggregated	50	NG	568.9770494
Riverside (SC)	2025	UBUS	Aggregated	55	GAS	2362.399105
Riverside (SC)	2025	UBUS	Aggregated	55	DSL	0.261547165
Riverside (SC)	2025	UBUS	Aggregated	55	NG	613.2130328
Riverside (SC)	2025	UBUS	Aggregated	60	GAS	3420.522465
Riverside (SC)	2025	UBUS	Aggregated	60	DSL	0.378694672
Riverside (SC)	2025	UBUS	Aggregated	60	NG	887.8723965
Riverside (SC)	2025	UBUS	Aggregated	65	GAS	2741.630322
Riverside (SC)	2025	UBUS	Aggregated	65	DSL	0.30353281
Riverside (SC)	2025	UBUS	Aggregated	65	NG	711.6508979
Riverside (SC)	2025	UBUS	Aggregated	70	GAS	667.8585911
Riverside (SC)	2025	UBUS	Aggregated	70	DSL	0.07394031
Riverside (SC)	2025	UBUS	Aggregated	70	NG	173.3574955
Riverside (SC)	2025	UBUS	Aggregated	75	GAS	0
Riverside (SC)	2025	UBUS	Aggregated	75	DSL	0
Riverside (SC)	2025	UBUS	Aggregated	75	NG	0

ROG_RUNEX	TOG_RUNEX	CO_RUNEX	NOx_RUNEX	SOx_RUNEX	CO2_RUNEX	CH4_RUNEX
2.592642431	3.78317775	53.56408946	5.856068424	0.04467745	4514.784205	0.562120169
0.128955571	0.146806101	2.079147704	14.07865492	0.032107223	3398.487292	0.005989652
0.478047284	14.12912887	44.17026053	2.75614555	0	4904.523084	13.5263709
1.638313298	2.390622919	48.47927816	5.128702283	0.036326756	3670.922674	0.35496772
0.068581743	0.078075094	1.049903474	15.00287304	0.035257223	3731.908687	0.003185444
0.376666406	11.37172838	35.77258611	2.296317268	0	4351.444738	10.89577718
1.086796141	1.585850377	43.89692998	4.609800981	0.029763366	3007.673356	0.235311439
0.045351561	0.0516293	0.690104351	7.782358563	0.021490817	2274.761343	0.002106463
0.238278676	7.825341034	25.18961818	1.678070599	0	3650.859655	7.521554525
0.763789112	1.114519279	40.09032834	4.182171993	0.024790477	2505.148695	0.165262321
0.025603841	0.029148024	0.405983355	4.546671788	0.017621235	1865.173555	0.001189232
0.154450118	5.539182555	18.22001033	1.286481994	0	3187.220462	5.340274762
0.565949482	0.825832155	36.73787449	3.858046937	0.021224348	2144.781107	0.122374458
0.024358858	0.027730705	0.364258316	4.551637013	0.015080436	1596.234923	0.001131406
0.113907901	4.064251548	13.35432112	1.074222374	0	2938.577534	3.917645325
0.442583326	0.64581655	33.80604861	3.612537006	0.018849272	1904.772853	0.095638622
0.01973574	0.022467638	0.280412373	3.406733911	0.013175202	1394.569597	0.000916674
0.086578997	3.012984587	9.843915797	0.947546405	0	2779.975128	2.901877936
0.364948517	0.53253202	31.20766464	3.437128097	0.017469002	1765.292702	0.078815672
0.016211254	0.018455278	0.211317729	2.548423352	0.01181932	1251.052151	0.000752971
0.066123646	2.236129262	7.257003336	0.858264785	0	2654.400198	2.151550831
0.317321908	0.463035383	28.90351743	3.321488908	0.016888602	1706.641616	0.06849302
0.013906951	0.015832005	0.158870513	1.882146782	0.010798902	1143.042793	0.000645942
0.050915447	1.662731477	5.350721484	0.792812098	0	2551.415614	1.597858444
0.290499834	0.423896676	26.82183086	3.26581155	0.016912901	1709.097044	0.062673607
0.012761674	0.014528195	0.122233057	1.450000611	0.010207605	1080.455158	0.000592747
0.039755856	1.240503163	3.946098231	0.744309491	0	2464.808664	1.190096021
0.281499693	0.410763691	25.07629763	3.235432112	0.017369267	1755.214155	0.060707284
0.01279003	0.014560476	0.101589051	1.231990825	0.010009047	1059.43827	0.000594064
0.031761637	0.930911779	2.91124408	0.708908221	0	2390.603391	0.890897807
0.287346401	0.419295194	23.52116739	3.257767259	0.018042271	1823.223093	0.06194809
0.01396228	0.015894992	0.096740575	1.264776794	0.010281406	1088.266879	0.000648512
0	0	0	0	0	0	0
0.309289687	0.451314785	22.17535844	3.326971409	0.01873861	1893.590145	0.066663035
0.016277044	0.018530176	0.107833512	1.534403727	0.010979396	1162.14782	0.000756027
0	0	0	0	0	0	0

0.346457936	0.505550607	20.77575974	3.533101181	0.019279833	1948.282316	0.074663446
0.019708523	0.022436653	0.134835259	2.044381492	0.012091756	1279.888934	0.00091541
0	0	0	0	0	0	0
0.372997451	0.544277006	20.11743731	3.677710339	0.019444926	1964.965452	0.080379996
0.023537791	0.026795983	0.170893154	2.047554807	0.012091756	1279.888934	0.001093269
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0.040179018	0.058629129	1.025747646	0.048285476	0.00583393	589.5353706	0.011556795
0.153458157	0.17470191	3.186294138	0.108659595	0.004492053	475.168665	0.007127838
0.025587836	0.037337711	0.93886943	0.041453464	0.004754856	480.4918239	0.007346334
0.114321928	0.130147914	2.38312652	0.093709621	0.003742304	395.8603498	0.005310035
0.016864337	0.024608401	0.840887406	0.03693155	0.00385847	389.9094105	0.004832771
0.057593087	0.065565901	1.173797284	0.069150308	0.003078034	325.5940112	0.002675089
0.011896847	0.017359852	0.771137085	0.03302365	0.003212028	324.5846406	0.003403844
0.024398263	0.0277758	0.468024128	0.052330085	0.002524988	267.0928084	0.001133253
0.008813943	0.012861285	0.705848938	0.030126036	0.002743289	277.2172311	0.002518377
0.015454117	0.017593485	0.286221168	0.045032945	0.00211655	223.888318	0.000717814
0.006895468	0.010061851	0.649795578	0.027876959	0.002435214	246.0853974	0.001968222
0.011932949	0.013584869	0.218462382	0.041589848	0.00183332	193.9283656	0.000554263
0.005680283	0.008288656	0.599517896	0.02625245	0.002257092	228.0855874	0.001620318
0.009702171	0.011045277	0.17579334	0.039596007	0.001657285	175.3073361	0.000450647
0.00492671	0.007189044	0.554228784	0.025151692	0.002183205	220.6191537	0.001405014
0.008211648	0.009348415	0.147131814	0.038442238	0.001550848	164.0484384	0.000381415
0.004481194	0.006538948	0.510682089	0.024583835	0.002183033	220.6017644	0.001278139
0.00719138	0.008186908	0.127146227	0.037825325	0.001498	158.4581891	0.000334026
0.004342996	0.00633729	0.479416747	0.024191404	0.002254885	227.8625743	0.001239496
0.006499168	0.007398871	0.113061574	0.037521359	0.001501813	158.8615572	0.000301874
0.004415663	0.006443325	0.448916876	0.024342082	0.002349098	237.383039	0.001261444
0.006060473	0.006899445	0.10342423	0.037487897	0.001571529	166.2361101	0.000281497
0.004756505	0.006940681	0.424677894	0.024794067	0.002453931	247.9767768	0.001360603
0.006045205	0.006882064	0.102028187	0.037998101	0.001703726	180.2199058	0.000280788
0.005173061	0.007548518	0.379485433	0.026656437	0.002470698	249.6711493	0.001481625
0.006397436	0.007283055	0.107644386	0.039080509	0.001915333	202.6036482	0.000297149
0.005525818	0.00806326	0.361234536	0.027702087	0.002471455	249.7476435	0.00158382
0.006643017	0.007562634	0.111575424	0.039605478	0.002068257	218.7799022	0.000308555
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0.739163901	0.841488959	3.667115296	0.649040464	0.009138338	966.6520572	0.03433275
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0.520799034	0.592895075	2.646148816	0.667056889	0.007692347	813.6953442	0.02419012
0.055644024	0.081195629	1.649842935	0.113976184	0.004523254	457.0877757	0.013133531
0.35800886	0.407569285	1.768420198	0.679908393	0.006378224	674.6875445	0.016628827
0.039965319	0.0583173	1.497193429	0.100467702	0.003765296	380.4939517	0.009409179
0.256677651	0.29221044	1.234854073	0.698395215	0.005240198	554.3073269	0.011922186
0.030055711	0.043857224	1.360504394	0.090800936	0.003216587	325.0453729	0.007061434

0.201419312	0.229302496	0.989023113	0.724767486	0.004393717	464.7667119	0.009355542
0.023775137	0.034692624	1.246182165	0.083596421	0.002855346	288.5409359	0.005577322
0.167332931	0.190497417	0.853065071	0.754349844	0.003799322	401.8916773	0.007772295
0.019721248	0.028777199	1.146741551	0.078657277	0.002646389	267.425227	0.004621881
0.14557113	0.165723053	0.776089037	0.785550111	0.003429034	362.7226846	0.006761501
0.017148498	0.025023048	1.059806263	0.075608372	0.002559615	258.6563955	0.004017413
0.132521319	0.150866711	0.743887594	0.81785415	0.003200388	338.5365274	0.006155362
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0.131107681	0.149257378	0.895452421	0.917818807	0.003231728	341.8516889	0.006089701
0.016005056	0.02335454	0.830196422	0.078893191	0.002872635	290.287993	0.003766113
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0.178202202	0.202871359	1.507057465	1.008340951	0.004242238	448.7433341	0.008277152
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0.257206594	0.292812607	2.354456547	0.152602847	0.005837035	617.4406717	0.011946755
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0.192335593	0.218961285	1.761771215	0.1279392	0.004913421	519.7408894	0.008933621
0.030644966	0.044717063	1.151092094	0.073415108	0.004690331	473.971383	0.008021783
0.094575433	0.107667843	0.863893501	0.087994897	0.004074035	430.9508552	0.004392848
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0.03751849	0.042712307	0.340062522	0.060306768	0.003347131	354.0590285	0.001742662
0.016239821	0.023697109	0.961251752	0.059227987	0.003334735	336.9844993	0.004229747
0.022822779	0.025982216	0.206025973	0.047667568	0.002806449	296.8657323	0.001060074
0.012764672	0.018626179	0.883606554	0.054672611	0.002960067	299.12324	0.003318987
0.017336373	0.019736308	0.156437757	0.041118104	0.002426784	256.7048457	0.000805241
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0.163169932	0.185758119	0.735073716	1.579344078	0.00522174	552.3548283	0.007578931
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3.0891711	3.839736895	20.72398926	1.159667431	0.002383622	240.871826	0.460685632
2.475582163	3.075648179	18.51503415	1.116834365	0.002107282	212.9469243	0.368917808
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1.894069205	2.349421003	18.83603764	1.127727149	0.002098282	212.037399	0.281559449
2.202629257	2.730755106	22.68856223	1.207786105	0.002222904	224.6307716	0.327170495
2.413648681	2.991840444	25.36146505	1.248455279	0.002288948	231.3047254	0.358417578
0.096007664	0.140078508	1.613724907	0.129092255	0.008963645	905.8019437	0.024516331
0.161564466	0.183930403	3.446829157	0.11245935	0.007520991	795.5693214	0.007504361
0.061563905	0.089823042	1.467147013	0.109630424	0.007296368	737.318871	0.015680582
0.120609776	0.137306211	2.578713706	0.096285012	0.006387152	675.6320096	0.005602094
0.040867953	0.059626496	1.309067985	0.096935931	0.005936389	599.8891412	0.010382276
0.059963538	0.068264501	1.266641795	0.069823828	0.005416734	572.981315	0.002785192
0.029004429	0.042317143	1.196381855	0.086197681	0.004939783	499.1792045	0.007352106
0.02452709	0.027922461	0.501067298	0.051637731	0.004498576	475.8587134	0.001139236
0.021601777	0.031516429	1.09271303	0.078369631	0.004220275	426.4709005	0.005465195
0.015211981	0.017317829	0.304673463	0.043628056	0.003804009	402.3875072	0.000706567
0.016968869	0.024756901	1.004495639	0.072406985	0.003745923	378.5362605	0.004286724
0.011647568	0.013259982	0.231809393	0.039736709	0.003285479	347.537495	0.000541007
0.014018451	0.02045217	0.926206848	0.068202941	0.003472016	350.8571322	0.003537726
0.009390785	0.010690784	0.185860601	0.037391314	0.002981118	315.3422174	0.000436184
0.012177449	0.017766087	0.856406384	0.065470113	0.003359006	339.4371238	0.003071439
0.00787046	0.008959995	0.154849603	0.035940956	0.002788426	294.9592688	0.000365568
0.011079735	0.016164453	0.790114074	0.06423317	0.003362399	339.7800777	0.002794328
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0.010721721	0.015642045	0.742843328	0.063538339	0.003468726	350.5246771	0.002705488
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0.010873253	0.015863014	0.69759725	0.064403511	0.003612476	365.0510377	0.002746284
0.005531062	0.006296747	0.106052871	0.034262455	0.002846176	301.0680499	0.000256907
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0.005413451	0.006162854	0.103297391	0.034588942	0.003081836	325.9961153	0.000251444
0.012650532	0.018455591	0.597558638	0.072147969	0.003823516	386.3772395	0.003203685
0.005626593	0.006405502	0.107446152	0.035502865	0.003460469	366.0479448	0.000261344
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1.067105716	1.214828912	2.445051975	14.33896407	0.019125236	2023.06461	0.049565021
0.154531799	0.225492439	2.005945169	0.471533036	0.031299858	3162.94027	0.039466088
0.803330634	0.914538518	1.939859046	11.9574858	0.017365796	1836.951362	0.037313172
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0.403943945	0.459863326	1.154095967	8.289237174	0.014258824	1508.296304	0.018762424
0.074801608	0.109150331	1.447262261	0.385063327	0.021276412	2150.042396	0.018871004
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0.097328688	0.11080224	0.432805833	4.708234055	0.009851498	1042.089951	0.004520732
0.037601536	0.054868073	1.069229511	0.317082907	0.014958549	1511.604157	0.009335405
0.079965082	0.09103493	0.373987294	4.371234321	0.009317158	985.5676077	0.003714225
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0.054029065	0.061508498	0.275402667	3.783291691	0.008275192	875.3486268	0.002509547
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0.201351787	0.293812056	1.476619552	0.433745859	0.036504682	3688.902605	0.043518432
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0.003141966	0.00458475	0.103638708	0.05164358	0.008544668	863.4632061	0.001127366
0.000260945	0.018638897	0.021245481	0.086210169	0.007018474	742.4131533	0.018263163
0.052263509	3.733107791	35.07044758	0.277509744	0	1354.301912	3.6578535
0.003375941	0.004926165	0.096981277	0.052671593	0.008891161	898.4773019	0.001211319
0.000245825	0.017558956	0.019600362	0.11059249	0.007256652	767.6075167	0.017204992
0.049619913	3.544279499	34.26838068	0.262272153	0	1307.961733	3.472831726
0.003766461	0.005496011	0.089602638	0.056238393	0.009162712	925.9182508	0.001351441
0.000232738	0.016624168	0.018204637	0.155235534	0.007671145	811.4526103	0.016289048
0.04718804	3.370574309	33.53055065	0.248254928	0	1265.3329	3.302628192
0.004063527	0.005929488	0.086308063	0.058311234	0.009246978	934.4335734	0.001458031
0.000232738	0.016624168	0.018204637	0.155235534	0.007671145	811.4526103	0.016289048
0.044936478	3.209748423	32.84742674	0.235277005	0	1225.864765	3.145044333
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0

Additional Documentation Attachment to Comment Letter 1-F5

PM10_RUNEX	PM2_5_RUNEX	N2O_RUNEX		Calculated	
				CO RUNEX*VMT	VMT
0.007345278	0.006753712	0.243092066		71.68717963	1.338344035
0.013634738	0.013044905	0.534194876		9064.577768	4359.756525
0.00680698	0.006512513	0.999819115		35130.52711	795.3434435
0.004645905	0.004271738	0.211657607		17.70547617	0.365217405
0.016332597	0.015626056	0.586604076		1393.654958	1327.412464
0.006072195	0.005809515	0.887070476		68376.15001	1911.41199
0.003100173	0.002850494	0.189051287		48.49268445	1.104694211
0.009411992	0.009004833	0.357560805		2399.292612	3476.709875
0.005045542	0.004827274	0.744251624		22004.47064	873.5531632
0.002182327	0.002006569	0.170391159		118.120552	2.946360303
0.004949168	0.004735069	0.293179309		22728.76334	55984.4709
0.004340471	0.004152704	0.649735741		14622.11463	802.5305346
0.00162044	0.001489935	0.156142344		400.6212072	10.90485535
0.007002838	0.006699898	0.250905901		13630.83618	37420.79616
0.00391252	0.003743266	0.599048254		15485.81196	1159.610573
0.001269067	0.00116686	0.145253952		887.5981251	26.25560104
0.007494578	0.007170366	0.21920692		25131.09828	89621.93088
0.003617068	0.003460595	0.566716116		12821.92433	1302.522756
0.001048182	0.000963764	0.137350288		1019.084041	32.65492798
0.008907368	0.008522039	0.196647976		23598.91289	111675.0262
0.003402609	0.003255414	0.541116845		23359.25341	3218.856645
0.000912956	0.000839429	0.131990088		884.5674822	30.60414651
0.011207014	0.010722203	0.179670409		17381.4167	109406.1848
0.003257631	0.003116707	0.520122764		12397.68527	2317.011884
0.000838469	0.000770941	0.129159183		928.2619897	34.60844991
0.014410222	0.013786842	0.169832505		14790.32236	121001.0014
0.003174968	0.003037621	0.50246737		7457.720495	1889.897326
0.000811924	0.000746534	0.127475475		1765.391615	70.40080801
0.018525011	0.017723627	0.166528943		22630.89155	222769.0028
0.003149855	0.003013594	0.48734014		1915.045255	657.809927
0.000828908	0.00076215	0.128019439		1896.389541	80.62480529
0.023537159	0.022518952	0.171060398		25614.77257	264777.9644
0	0	0		0	0
0.000892145	0.000820294	0.130561379		2608.584459	117.6343763
0.029423396	0.028150553	0.182673454		47685.38414	442213.0298
0	0	0		0	0

0.001012248	0.000930724	0.138644964	1380.798857	66.46201506
0.036175146	0.034610225	0.201180717	64754.88931	480251.9001
0	0	0	0	0
0.001099776	0.001011203	0.144388576	270.6589707	13.45394876
0.036175146	0.034610225	0.201180717	22157.39036	129656.3953
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0.00881116	0.008101536	0.00659549	50781.11742	49506.44305
0.013427514	0.012846646	0.074689897	1740.759983	546.3274599
0.005549891	0.00510292	0.005677564	18321.38624	19514.30695
0.010691682	0.010229165	0.062223734	513.2057781	215.3497826
0.003687637	0.003390646	0.005067511	62238.81239	74015.63154
0.00853325	0.008164105	0.051178844	958.755471	816.7981676
0.002584667	0.002376505	0.004537596	160995.5809	208776.8621
0.0069167	0.006617486	0.04198327	1078.305734	2303.953298
0.001910873	0.001756977	0.004143011	954946.9606	1352905.572
0.005747386	0.005498756	0.035192126	4273.272029	14929.96505
0.001490085	0.001370078	0.003835375	1839668.621	2831149.8
0.004967432	0.004752543	0.030482838	6825.44262	31243.10259
0.001225547	0.001126845	0.00361192	1929590.705	3218570.652
0.004429144	0.004237542	0.027555872	6243.911939	35518.47841
0.001063113	0.000977493	0.0034591	1451531.144	2619010.753
0.004057357	0.003881838	0.02578613	4252.410448	28902.04595
0.000972648	0.000894314	0.003378146	1115817.806	2184955.828
0.00381009	0.003645267	0.024907421	3065.754995	24112.04065
0.000938562	0.000862973	0.003320299	1429904.632	2982592.161
0.003665488	0.00350692	0.024970825	3721.347331	32914.34203
0.000955236	0.000878304	0.003335255	1148252.194	2557828.084
0.003616061	0.003459632	0.026130002	2919.341865	28226.86571
0.001025446	0.00094286	0.003389585	1568260.339	3692823.104
0.003718048	0.003557207	0.028328059	4157.861113	40752.0828
0.001161151	0.001067636	0.003632003	975578.115	2570791.997
0.003981044	0.003808825	0.031846472	3053.863556	28369.92874
0.001260587	0.001159064	0.003767175	165094.0482	457027.3099
0.004164409	0.003984259	0.034389154	562.7325062	5043.516639
0.011575975	0.010643682	0.012711062	9876.461831	4762.579704
0.492430736	0.4711284	0.151944242	3.663211905	0.998935569
0.007360099	0.00676734	0.010744809	3499.47267	1877.299933
0.343743044	0.328872872	0.127901577	1.041941053	0.393757542
0.004933885	0.004536525	0.009467358	11747.53056	7120.393283
0.250930917	0.240075757	0.106051486	2.641098926	1.493479282
0.003485631	0.003204909	0.008393849	30070.51119	20084.58667
0.191575297	0.183287835	0.087129393	5.202040841	4.212676586
0.002594038	0.002385122	0.007614934	177071.2148	130151.1525

0.152983895	0.146365879	0.073054855	26.99912438	27.29877999
0.002032895	0.001869172	0.007024905	339410.2186	272360.0353
0.127824976	0.122295324	0.063171775	48.73273235	57.12662963
0.001677171	0.001542097	0.006611613	355066.0334	309630.3899
0.111723128	0.106890035	0.057014955	50.40229924	64.94396501
0.001456423	0.001339128	0.006346069	267020.3099	251952.0023
0.102133533	0.097715281	0.053213228	39.31156655	52.84611123
0.001331133	0.001223928	0.006230513	205778.3268	210195.3935
0.09764804	0.093423829	0.051306579	33.11175307	44.08779864
0.001280588	0.001177453	0.006171695	264640.1611	286928.9736
0.097641489	0.093417561	0.051391811	48.07605102	60.18241695
0.001296975	0.001192521	0.006270338	213955.5449	246066.1556
0.102121977	0.097704226	0.053734325	46.21570897	51.61157407
0.001383291	0.001271885	0.00646814	294930.6406	355254.0494
0.111768078	0.10693304	0.058205274	78.96504319	74.51337889
0.001554234	0.00142906	0.00708197	186950.0254	247313.2997
0.128005782	0.122468309	0.065377621	68.62183577	51.87315847
0.001680185	0.001544868	0.007437573	31982.01454	43966.58002
0.139327019	0.133299794	0.070536203	13.89785313	9.221846847
0.009079367	0.008348143	0.009262113	21121.90192	14914.02358
0.011211105	0.010726118	0.097053075	281.9627059	119.7570226
0.005728102	0.005266778	0.007917311	7579.843721	5878.766807
0.009825039	0.009400012	0.08169603	83.16525199	47.2054778
0.003811914	0.003504914	0.007032495	25666.4983	22297.5194
0.008276528	0.007918489	0.067739473	154.6759962	179.0452133
0.002675481	0.002460006	0.006273358	66187.94169	62894.90525
0.00692814	0.006628432	0.055653149	171.7435372	505.0351801
0.001980319	0.00182083	0.005713877	391775.9128	407568.4771
0.005872133	0.005618107	0.046663159	674.2620629	3272.704179
0.001545601	0.001421123	0.005282394	753624.2748	852895.7503
0.005156942	0.004933855	0.040350427	1071.380398	6848.604942
0.001271909	0.001169473	0.004973225	789842.0094	969607.9065
0.004639917	0.004439196	0.036417811	974.3083097	7785.783313
0.001103541	0.001014665	0.004766542	594094.7452	788987.9725
0.004254364	0.004070322	0.033989491	658.5937089	6335.436571
0.001009456	0.000928157	0.004664124	457042.2966	658227.1061
0.003962794	0.003791365	0.032771635	470.0656176	5285.449494
0.000973558	0.000895151	0.004597257	586179.9705	898518.3966
0.003743681	0.003581731	0.032826076	562.7454198	7214.946878
0.000989999	0.000910267	0.004637566	471568.7953	770556.437
0.003585523	0.003430415	0.034322337	433.0108374	6187.434538
0.001061552	0.000976058	0.004739553	645589.08	1112478.447
0.003560977	0.00340693	0.037178117	603.6428196	8933.008969
0.001200404	0.001103727	0.005121789	403969.3019	774461.8701
0.003658104	0.003499856	0.041759392	432.797288	6218.794488

0.00130224	0.001197362	0.005338471	68583.93316	137681.3937
0.003725824	0.003564646	0.045054392	78.50496968	1105.557711
0.007676363	0.007058132	0.016615097	1599.461447	1268.579861
0.061101954	0.058458711	0.18553575	3389.005325	1035.616835
0.004851839	0.004461087	0.014510989	343.8939103	341.1584396
0.04607551	0.044082304	0.155971747	597.3443796	247.6276444
0.003235263	0.002974705	0.013016532	885.3212875	1061.5705
0.035525819	0.033988987	0.101862603	973.1941848	716.5905908
0.002275804	0.002092518	0.011830798	2111.711783	2955.303069
0.028165893	0.026947449	0.086822487	1934.822973	2632.148222
0.001688684	0.001552682	0.010893715	6686.507629	10615.24005
0.023073614	0.02207546	0.077003277	4793.905437	8960.846762
0.001321643	0.001215202	0.010188531	14436.53971	25392.31296
0.019708	0.018855441	0.0699273	9593.794258	21597.49563
0.001090937	0.001003076	0.009681233	16161.72022	30830.20379
0.01745245	0.016697465	0.0699273	10045.76847	25744.99502
0.000949665	0.000873182	0.009355579	14827.48661	30051.13157
0.015976204	0.015285081	0.068012954	10007.47979	27717.46935
0.000871755	0.000801546	0.009176801	16644.86829	35037.76763
0.015095235	0.014442222	0.066341285	10535.97033	29970.39833
0.000843805	0.000775848	0.009074989	32488.58616	68930.68647
0.014719488	0.01408273	0.06954997	19198.36514	53259.41657
0.00086117	0.000791814	0.009139246	35171.40305	73019.56846
0.014829953	0.014188416	0.07267725	22268.68015	57109.91054
0.000926645	0.000852015	0.009363606	52437.10507	102623.3302
0.015608788	0.014933558	0.07339251	45221.68626	100691.2887
0.001051238	0.000966574	0.010049277	41725.53578	74788.43429
0.017156901	0.016414701	0.074347992	77590.8291	141416.6528
0.001142096	0.001050115	0.010452072	10395.1694	17464.81695
0.018236275	0.017447382	0.073503128	24931.59176	40319.40599
0.00698728	0.006424546	0.016834397	127.4965984	192.0092966
0.058555466	0.056022383	0.19633485	1357.306354	405.1086101
0.004402143	0.004047608	0.014603933	29.3664426	51.63694779
0.045743744	0.04376489	0.174488915	240.0314931	96.86602951
0.002925915	0.002690271	0.013009267	79.67463385	160.6768414
0.036082299	0.034521395	0.116152024	379.8446086	280.3131511
0.002051601	0.001886372	0.01173832	197.2394832	447.3077977
0.029031454	0.027775566	0.099069131	714.1243459	1029.633617
0.001517564	0.001395344	0.010726654	639.5485182	1606.69804
0.024010436	0.022971755	0.088286097	1723.937334	3505.26957
0.001184165	0.001088796	0.009957544	1397.268114	3843.32142
0.020671936	0.019777677	0.079619977	3411.383485	8448.425269
0.000974721	0.00089622	0.0093949	1565.404443	4666.387926
0.018390851	0.017595271	0.079619977	3533.436533	10070.82813
0.000846332	0.000778171	0.009021301	1421.492094	4548.469367

0.01684325	0.016114618	0.076711877	3479.844162	10842.41305
0.000775145	0.000712718	0.00880031	1561.004254	5303.235
0.015848459	0.015162861	0.073738956	3618.600193	11723.70515
0.000748857	0.000688547	0.008663672	2941.160488	10433.18835
0.015314383	0.014651889	0.076454886	6507.765074	20833.81372
0.000763098	0.00070164	0.008698574	3028.491588	11052.07202
0.015213516	0.014555386	0.079134489	7448.02757	22340.03515
0.000820199	0.000754143	0.008899273	4224.458735	15532.82852
0.015765883	0.015083858	0.079410284	14964.47846	39388.03102
0.000929851	0.000854964	0.009559916	3095.991898	11319.80344
0.017032905	0.01629607	0.079619977	25451.75273	55318.82231
0.001010049	0.000928702	0.009953035	735.864506	2643.434066
0.017916298	0.017141246	0.078654886	8141.581678	15771.99016
0.011668027	0.010889825	0.090704292	16398.94007	351.7371669
0.007546891	0.007044294	0.081351104	4909.450649	138.6467421
0.005147643	0.004805316	0.075642796	15072.78337	525.8719258
0.003701223	0.003455416	0.07061249	35468.57439	1483.333834
0.002804197	0.002618198	0.067158827	199203.691	9612.227087
0.002237862	0.002089598	0.064650337	372429.354	20114.96986
0.001880475	0.001756018	0.063101813	390230.7502	22867.54719
0.001663297	0.001553315	0.062371775	301900.1855	18607.74811
0.001548155	0.001445866	0.062548617	247810.8599	15523.84145
0.001515978	0.001415879	0.062722683	342152.8681	21190.94914
0.001561401	0.001458356	0.063807722	310319.3586	18173.05281
0.001691251	0.001579676	0.065189994	494202.105	26237.05232
0.0019263	0.001799247	0.069815089	414410.2148	18265.1598
0.002094849	0.001956686	0.07216673	82351.78688	3247.122622
0.009134372	0.008398747	0.011536202	17492.62651	10839.90613
0.010628338	0.01016856	0.125052418	1066.461477	309.4036368
0.005763882	0.005299697	0.009854906	6268.888756	4272.842939
0.008892269	0.008507593	0.106199943	314.4994937	121.9598333
0.003836447	0.003527487	0.00875024	21215.31323	16206.42585
0.007305066	0.006989052	0.090064683	585.9235492	462.5803061
0.002693202	0.002476311	0.007804356	54691.01469	45713.67783
0.006026145	0.005765457	0.074798363	653.7957841	1304.806333
0.001993797	0.001833232	0.007108444	323696.0535	296231.5307
0.005062484	0.004843484	0.063249713	2576.118313	8455.341938
0.001556391	0.001431051	0.006572743	622694.0301	619907.1514
0.004414534	0.004223563	0.054628054	4101.640274	17694.02103
0.001280996	0.001177835	0.006189894	652731.8911	704736.6283
0.003956145	0.003785004	0.049567405	3738.643667	20115.31032
0.001111589	0.001022072	0.00593509	491112.4849	573457.2911
0.003625939	0.003469083	0.046363489	2534.609551	16368.20183
0.001016951	0.000935055	0.005810593	378003.8789	478416.8407
0.003389522	0.003242893	0.044618164	1816.223929	13655.46054

0.000980895	0.000901903	0.005730712	485126.3858	653066.8954
0.003228028	0.003088385	0.044841744	2186.282923	18640.5002
0.000997549	0.000917216	0.005785067	390696.8493	560060.7644
0.003133018	0.002997485	0.047323705	1695.342584	15985.82453
0.001069717	0.000983572	0.005917148	535766.1417	808578.7092
0.003161294	0.003024538	0.05124205	2384.029083	23079.27672
0.001209684	0.001112267	0.006401	336365.3608	562899.3363
0.003310916	0.003167687	0.057537639	1726.320772	16066.84593
0.001312319	0.001206637	0.00667563	57240.24411	100070.4723
0.003415234	0.003267493	0.061940228	315.1943494	2856.313301
0.007811455	0.007182345	0.03796844	222.815386	89.81688798
0.285477929	0.27312828	0.317997584	88.8508297	36.33903516
0.004942299	0.004544261	0.033101276	49.16553392	24.50990918
0.244639945	0.234056929	0.288743173	18.70962067	9.644835128
0.003298982	0.003033292	0.029609621	124.1216344	74.1365401
0.177359008	0.169686536	0.237083175	30.5824248	26.49903099
0.002322991	0.002135904	0.026726593	286.1694889	197.7316044
0.129271446	0.123679221	0.194554941	52.60325759	78.76744601
0.001725402	0.001586443	0.024528839	937.7770084	731.8298924
0.108783162	0.104077251	0.174507875	147.0528355	287.9556576
0.001351653	0.001242795	0.022852235	2043.008473	1762.025544
0.098179564	0.093932359	0.163802028	303.7522444	701.8210504
0.001116689	0.001026754	0.021639399	2343.202936	2191.487339
0.09248641	0.088485489	0.154917503	328.1780911	877.5113391
0.000972859	0.000894508	0.020821818	2063.950266	2053.858445
0.091595715	0.087633325	0.147854299	279.0959477	844.8994837
0.000893674	0.0008217	0.020399096	2235.268841	2322.5891
0.095446496	0.091317522	0.142612416	265.6218142	885.5497331
0.000865537	0.000795829	0.02014948	4479.307132	4724.630827
0.10400144	0.099502384	0.139191855	504.3810818	1789.612966
0.000883768	0.000812592	0.020247204	5196.806681	5410.76802
0.117236311	0.11216472	0.137592614	598.5111082	2173.221905
0.000951289	0.000874675	0.020655186	7965.79701	7894.497466
0.135295027	0.129442224	0.137814695	1007.676736	3574.971298
0.001079422	0.000992489	0.021944966	4867.999798	4460.296609
0.15813465	0.151293815	0.139858097	781.2347637	2599.301782
0.001172777	0.001078325	0.022859132	1041.622672	902.9007316
0.185582628	0.177554406	0.14372282	199.2600051	604.3871491
0.007230877	0.006648525	0.025391316	235.7951319	159.6857712
0.006394443	0.006117822	0.35746364	1525.041527	1914.180082
0.004552067	0.004185458	0.022032599	57.65697379	43.57625652
0.00555645	0.005316081	0.295754363	249.9018041	508.0473715
0.003023179	0.002779702	0.019606633	156.8799957	131.8076238
0.00425892	0.004074681	0.232821656	373.9220872	1395.852066
0.002118138	0.001947549	0.017602374	380.5342825	351.5477373

0.00346313	0.003313317	0.198773713	743.8470994	4149.121616
0.001565577	0.00143949	0.016065854	1287.38959	1301.123023
0.003214977	0.003075899	0.173508124	2081.329283	15168.23388
0.001220729	0.001122415	0.014886221	2848.842377	3132.711613
0.0033881	0.003241532	0.152341818	3900.552675	36968.83723
0.001004122	0.000923253	0.014022889	3270.615512	3896.253296
0.003951594	0.00378065	0.136074288	3688.006309	46223.42667
0.000871307	0.000801135	0.013429015	2841.874369	3651.562385
0.004905395	0.00469319	0.124687525	2672.174811	44505.57798
0.000797571	0.000733337	0.013101789	2989.159407	4129.339593
0.0062495	0.005979149	0.118163925	2158.288654	46646.85381
0.000770154	0.000708128	0.012900241	5707.320434	8399.938301
0.00798395	0.007638568	0.116486093	3626.051244	94268.91713
0.000784498	0.000721317	0.012933782	6168.82999	9619.824106
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0.000842966	0.000775076	0.013179197	8566.214624	14035.65571
0.012597313	0.012052359	0.127896784	7673.984322	188313.7189
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0.01543489	0.014767184	0.140836423	6952.86805	136919.7525
0.001037865	0.000954278	0.014579289	910.5121196	1605.270489
0.01543489	0.014767184	0.140836423	2052.967476	31836.44909
0	0	0	0	0
0.006474817	0.005953355	0.033739959	97.56457086	39.60282048
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0.004086075	0.003756995	0.029372399	22.96663561	10.80711607
0.00633144	0.006057544	0.35729312	7.658059574	10.24489959
0.002720405	0.002501312	0.026231601	60.87981964	32.68890912
0.005103882	0.004883091	0.285090879	12.30925339	29.51532673
0.001910687	0.001756806	0.023638383	145.1773395	87.18548824
0.004349886	0.004161712	0.244054073	24.77256274	88.49011437
0.001415635	0.001301624	0.021657925	486.0708363	322.6846142
0.004152268	0.003972643	0.212932906	69.12692395	323.2334755
0.001106355	0.001017253	0.02014412	1070.226676	776.927178
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0.005464946	0.005228535	0.166878751	120.4928109	978.2855233
0.000792938	0.000729078	0.01829898	1071.948627	905.604604
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0.009152041	0.008756128	0.146179536	72.67486276	1011.972142
0.000703149	0.000646519	0.017669012	2208.718237	2083.224109
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0.000717096	0.000659343	0.017742968	2446.727673	2385.761513
0.014899799	0.01425524	0.146867377	132.589084	2391.890576
0.000771207	0.000709097	0.018094425	3522.894282	3480.908468

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0.00087462	0.000804181	0.019218004	1991.212935	1966.671634
0.024225742	0.023177747	0.180047948	281.9383047	3336.518591
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0.003906453	0.003591839	0.036392667	213.7190055	151.2930034
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0.002457931	0.002259977	0.031505407	683.4446943	530.2742225
0.084958951	0.081283665	0.31878083	963.5294566	1008.766714
0.001631516	0.001500119	0.027817573	1248.198975	1060.548445
0.058491077	0.055960779	0.258158967	1256.875104	2017.533428
0.00114248	0.001050468	0.024947543	1551.601012	1439.522025
0.04027971	0.038537227	0.217566592	1173.962068	2738.473493
0.000843996	0.000776023	0.022758212	2248.021264	2272.382254
0.032898981	0.031475786	0.193275911	1454.449334	4322.864439
0.000657757	0.000604783	0.021094339	2482.157331	2726.261264
0.028946889	0.02769466	0.176314922	1431.092641	5186.300786
0.000540787	0.000497234	0.019927458	2347.469623	2798.164213
0.026596823	0.025446256	0.162957651	1216.971035	5323.0853
0.000469053	0.000431277	0.019106279	1464.964743	1888.908772
0.025835606	0.024717969	0.153047594	693.4824515	3593.363987
0.000429192	0.000394627	0.018592034	651.9108505	906.2529599
0.026660489	0.025507168	0.146492992	289.5288039	1724.009544
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0.029076446	0.027818612	0.143236318	131.8264119	863.4363473
0.000421908	0.000387928	0.018719581	418.6086909	675.5699022
0.033094827	0.031663159	0.143239934	188.4578807	1285.169826
0.000453264	0.00041676	0.01900073	218.4924171	375.986377
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0	0	0	0	0
0.006537457	0.00601095	0.037238628	77.49662027	164.3844143
0.00457144	0.004373681	0.299404146	0.02785956	0.163300718
0.005936844	0.005680019	0.536420686	21890.16677	382.8683386
0.003908646	0.003593856	0.038838332	199.719656	405.622084
0.004179051	0.003998267	0.250159692	0.060442773	0.507417854
0.004866046	0.004655543	0.461166306	60417.16141	1189.671624
0.002606867	0.002396918	0.033773211	321.1414383	722.7497618
0.003608159	0.003452072	0.199479358	0.067208818	0.887143459
0.003925505	0.003755689	0.417145316	97856.30204	2079.961103
0.001811527	0.001665632	0.031051852	2748.65583	6629.777409
0.003322449	0.003178721	0.171844899	0.471665335	8.388093221
0.00311522	0.002980457	0.385911926	873095.9632	19666.38818

0.001653332	0.001520178	0.007373152		55.81830383	341.9948942
0.003321921	0.003178216	0.154500127		0.001704083	0.037863118
0.002435193	0.002329847	0.361685427		3758.480399	88.77235258
0.001288503	0.001184731	0.006823515		123.0192085	818.3245794
0.003606575	0.003450556	0.14087052		0.003413394	0.090598779
0.001885422	0.00180386	0.341890936		8636.292882	212.4142767
0.001059366	0.000974048	0.006422134		138.3993547	997.249944
0.00417641	0.00399574	0.130172547		0.003587474	0.110408057
0.001465908	0.001402494	0.325154932		10156.7788	258.8583197
0.000918844	0.000844843	0.006146272		124.9782041	973.2369446
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0.001176652	0.00112575	0.310657546		9601.258596	252.6252136
0.000840759	0.000773047	0.005994176		134.0108206	1126.554233
0.006171626	0.005904644	0.117571508		0.003195355	0.124723662
0.001017652	0.000973629	0.297869945		10796.28901	292.422113
0.000811591	0.000746228	0.005889352		243.286322	2191.980275
0.007597007	0.007268364	0.115668441		0.005633889	0.242679667
0.000988909	0.000946129	0.286431047		20454.16304	568.9770494
0.000826489	0.000759926	0.005903575		244.8359909	2362.399105
0.00930757	0.008904928	0.116697009		0.005556695	0.261547165
0.001090423	0.001043252	0.276083304		21505.65552	613.2130328
0.000887915	0.000816405	0.006021091		331.7266371	3420.522465
0.011303314	0.010814338	0.120657212		0.007422553	0.378694672
0.001322194	0.001264997	0.266636556		30425.94927	887.8723965
0.001006331	0.000925284	0.006428826		245.6573087	2741.630322
0.01358424	0.012996592	0.12754905		0.005525705	0.30353281
0.001684222	0.001611364	0.257946389		23862.04648	711.6508979
0.001093047	0.001005016	0.00666578		57.64158115	667.8585911
0.01358424	0.012996592	0.12754905		0.001346057	0.07394031
0.002176507	0.002082353	0.249900552		5694.347633	173.3574955
0	0	0		0	0
0	0	0		0	0
0	0	0		0	0

Aggregate Emission Factors by Speed.

Speed	CO RUNEX*VMT	VMT
5	194261.9093	92674.5356
10	175159.0755	39784.92341
15	265854.5046	135768.4574
20	1271953.325	442361.1069
25	2110131.17	2311594.747
30	4030520.469	4855572.391
35	4232590.645	5539647.314
40	3194445.289	4548205.06
45	2486106.131	3855446.425

50	3239745.109	5395409.66
55	2676408.43	4772910.229
60	3773178.812	6995430.181
65	2580137.232	5148267.283
70	483308.7528	993893.516
75	0	0

CO_RUNEX
53.56408946
2.079147704
44.17026053
48.47927816
1.049903474
35.77258611
43.89692998
0.690104351
25.18961818
40.09032834
0.405983355
18.22001033
36.73787449
0.364258316
13.35432112
33.80604861
0.280412373
9.843915797
31.20766464
0.211317729
7.257003336
28.90351743
0.158870513
5.350721484
26.82183086
0.122233057
3.946098231
25.07629763
0.101589051
2.91124408
23.52116739
0.096740575
0
22.17535844
0.107833512
0

20.77575974
0.134835259
0
20.11743731
0.170893154
0
0
0
1.025747646
3.186294138
0.93886943
2.38312652
0.840887406
1.173797284
0.771137085
0.468024128
0.705848938
0.286221168
0.649795578
0.218462382
0.599517896
0.17579334
0.554228784
0.147131814
0.510682089
0.127146227
0.479416747
0.113061574
0.448916876
0.10342423
0.424677894
0.102028187
0.379485433
0.107644386
0.361234536
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3.667115296
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2.646148816
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1.768420198
1.497193429
1.234854073
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0.751041197
0.922319408
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0.895452421
0.830196422
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0.755923865
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0.727416472
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0.863893501
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0.103953958
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0.025619477
36.9202209
0.110989284
0.02321533
35.94901247
0.103638708
0.021245481
35.07044758
0.096981277
0.019600362
34.26838068
0.089602638
0.018204637
33.53055065
0.086308063
0.018204637
32.84742674
0
0
0

CO_RUNEX
2.09617354
4.402649558
1.958146316
2.875373321
0.912846498
0.830081429
0.764054173
0.70235296
0.64482964

0.60046323
0.560749795
0.539377667
0.501166138
0.486278203
N/A

EMFAC2017 (v1.0.2) Emission Rates
Region Type: Sub-Area
Region: Riverside (SC)
Calendar Year: 2035
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, g/mile for RUNEX, PMBW and PMTW

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	VMT
Riverside (SC)	2035	HHDT	Aggregated	5	GAS	1.841083588
Riverside (SC)	2035	HHDT	Aggregated	5	DSL	5017.530123
Riverside (SC)	2035	HHDT	Aggregated	5	NG	1439.826605
Riverside (SC)	2035	HHDT	Aggregated	10	GAS	0.555221697
Riverside (SC)	2035	HHDT	Aggregated	10	DSL	1669.105176
Riverside (SC)	2035	HHDT	Aggregated	10	NG	3460.268465
Riverside (SC)	2035	HHDT	Aggregated	15	GAS	1.435369899
Riverside (SC)	2035	HHDT	Aggregated	15	DSL	5195.778861
Riverside (SC)	2035	HHDT	Aggregated	15	NG	1581.41127
Riverside (SC)	2035	HHDT	Aggregated	20	GAS	4.057550072
Riverside (SC)	2035	HHDT	Aggregated	20	DSL	67102.82696
Riverside (SC)	2035	HHDT	Aggregated	20	NG	1452.837544
Riverside (SC)	2035	HHDT	Aggregated	25	GAS	16.48650861
Riverside (SC)	2035	HHDT	Aggregated	25	DSL	48986.60625
Riverside (SC)	2035	HHDT	Aggregated	25	NG	2099.266886
Riverside (SC)	2035	HHDT	Aggregated	30	GAS	37.45939649
Riverside (SC)	2035	HHDT	Aggregated	30	DSL	113320.7711
Riverside (SC)	2035	HHDT	Aggregated	30	NG	2357.983752
Riverside (SC)	2035	HHDT	Aggregated	35	GAS	43.8522515
Riverside (SC)	2035	HHDT	Aggregated	35	DSL	130547.2993
Riverside (SC)	2035	HHDT	Aggregated	35	NG	5827.162431
Riverside (SC)	2035	HHDT	Aggregated	40	GAS	42.36431712
Riverside (SC)	2035	HHDT	Aggregated	40	DSL	134054.8268
Riverside (SC)	2035	HHDT	Aggregated	40	NG	4194.534301
Riverside (SC)	2035	HHDT	Aggregated	45	GAS	61.39013725
Riverside (SC)	2035	HHDT	Aggregated	45	DSL	174350.4081
Riverside (SC)	2035	HHDT	Aggregated	45	NG	3421.320025
Riverside (SC)	2035	HHDT	Aggregated	50	GAS	99.06092682
Riverside (SC)	2035	HHDT	Aggregated	50	DSL	289865.8288
Riverside (SC)	2035	HHDT	Aggregated	50	NG	1190.846849
Riverside (SC)	2035	HHDT	Aggregated	55	GAS	108.5658483
Riverside (SC)	2035	HHDT	Aggregated	55	DSL	326177.2243
Riverside (SC)	2035	HHDT	Aggregated	55	NG	0
Riverside (SC)	2035	HHDT	Aggregated	60	GAS	141.8653935
Riverside (SC)	2035	HHDT	Aggregated	60	DSL	505304.6188
Riverside (SC)	2035	HHDT	Aggregated	60	NG	0

Riverside (SC)	2035	HHDT	Aggregated	65	GAS	69.24281283
Riverside (SC)	2035	HHDT	Aggregated	65	DSL	469626.4146
Riverside (SC)	2035	HHDT	Aggregated	65	NG	0
Riverside (SC)	2035	HHDT	Aggregated	70	GAS	19.41677002
Riverside (SC)	2035	HHDT	Aggregated	70	DSL	155590.0441
Riverside (SC)	2035	HHDT	Aggregated	70	NG	0
Riverside (SC)	2035	HHDT	Aggregated	75	DSL	0
Riverside (SC)	2035	HHDT	Aggregated	75	NG	0
Riverside (SC)	2035	LDA	Aggregated	5	GAS	58921.3354
Riverside (SC)	2035	LDA	Aggregated	5	DSL	721.1940045
Riverside (SC)	2035	LDA	Aggregated	10	GAS	25028.43444
Riverside (SC)	2035	LDA	Aggregated	10	DSL	306.3467034
Riverside (SC)	2035	LDA	Aggregated	15	GAS	83504.89691
Riverside (SC)	2035	LDA	Aggregated	15	DSL	1022.095487
Riverside (SC)	2035	LDA	Aggregated	20	GAS	263988.4575
Riverside (SC)	2035	LDA	Aggregated	20	DSL	3231.204648
Riverside (SC)	2035	LDA	Aggregated	25	GAS	1589429.45
Riverside (SC)	2035	LDA	Aggregated	25	DSL	19454.53175
Riverside (SC)	2035	LDA	Aggregated	30	GAS	3296943.471
Riverside (SC)	2035	LDA	Aggregated	30	DSL	40354.41234
Riverside (SC)	2035	LDA	Aggregated	35	GAS	3551225.968
Riverside (SC)	2035	LDA	Aggregated	35	DSL	43466.81655
Riverside (SC)	2035	LDA	Aggregated	40	GAS	2901166.759
Riverside (SC)	2035	LDA	Aggregated	40	DSL	35510.12649
Riverside (SC)	2035	LDA	Aggregated	45	GAS	2868062.23
Riverside (SC)	2035	LDA	Aggregated	45	DSL	35104.92881
Riverside (SC)	2035	LDA	Aggregated	50	GAS	3411212.723
Riverside (SC)	2035	LDA	Aggregated	50	DSL	41753.0619
Riverside (SC)	2035	LDA	Aggregated	55	GAS	2888246.223
Riverside (SC)	2035	LDA	Aggregated	55	DSL	35351.97982
Riverside (SC)	2035	LDA	Aggregated	60	GAS	3576816.925
Riverside (SC)	2035	LDA	Aggregated	60	DSL	43780.0485
Riverside (SC)	2035	LDA	Aggregated	65	GAS	2541830.494
Riverside (SC)	2035	LDA	Aggregated	65	DSL	31111.86976
Riverside (SC)	2035	LDA	Aggregated	70	GAS	555169.1747
Riverside (SC)	2035	LDA	Aggregated	70	DSL	6795.241105
Riverside (SC)	2035	LDT1	Aggregated	5	GAS	5877.562098
Riverside (SC)	2035	LDT1	Aggregated	5	DSL	0.77904414
Riverside (SC)	2035	LDT1	Aggregated	10	GAS	2496.653828
Riverside (SC)	2035	LDT1	Aggregated	10	DSL	0.330920117
Riverside (SC)	2035	LDT1	Aggregated	15	GAS	8329.838652
Riverside (SC)	2035	LDT1	Aggregated	15	DSL	1.104082251
Riverside (SC)	2035	LDT1	Aggregated	20	GAS	26333.56053
Riverside (SC)	2035	LDT1	Aggregated	20	DSL	3.490393751
Riverside (SC)	2035	LDT1	Aggregated	25	GAS	158549.8738

Riverside (SC)	2035	LDT1	Aggregated	25	DSL	21.0150651
Riverside (SC)	2035	LDT1	Aggregated	30	GAS	328879.002
Riverside (SC)	2035	LDT1	Aggregated	30	DSL	43.59141683
Riverside (SC)	2035	LDT1	Aggregated	35	GAS	354244.3668
Riverside (SC)	2035	LDT1	Aggregated	35	DSL	46.95348063
Riverside (SC)	2035	LDT1	Aggregated	40	GAS	289399.2077
Riverside (SC)	2035	LDT1	Aggregated	40	DSL	38.35854955
Riverside (SC)	2035	LDT1	Aggregated	45	GAS	286096.9416
Riverside (SC)	2035	LDT1	Aggregated	45	DSL	37.92084919
Riverside (SC)	2035	LDT1	Aggregated	50	GAS	340277.668
Riverside (SC)	2035	LDT1	Aggregated	50	DSL	45.1022582
Riverside (SC)	2035	LDT1	Aggregated	55	GAS	288110.3494
Riverside (SC)	2035	LDT1	Aggregated	55	DSL	38.18771724
Riverside (SC)	2035	LDT1	Aggregated	60	GAS	356797.1338
Riverside (SC)	2035	LDT1	Aggregated	60	DSL	47.29183829
Riverside (SC)	2035	LDT1	Aggregated	65	GAS	253554.4463
Riverside (SC)	2035	LDT1	Aggregated	65	DSL	33.60748935
Riverside (SC)	2035	LDT1	Aggregated	70	GAS	55379.62229
Riverside (SC)	2035	LDT1	Aggregated	70	DSL	7.340317211
Riverside (SC)	2035	LDT2	Aggregated	5	GAS	18013.82156
Riverside (SC)	2035	LDT2	Aggregated	5	DSL	179.2006557
Riverside (SC)	2035	LDT2	Aggregated	10	GAS	7651.859023
Riverside (SC)	2035	LDT2	Aggregated	10	DSL	76.12033622
Riverside (SC)	2035	LDT2	Aggregated	15	GAS	25529.67108
Riverside (SC)	2035	LDT2	Aggregated	15	DSL	253.9679757
Riverside (SC)	2035	LDT2	Aggregated	20	GAS	80708.30263
Riverside (SC)	2035	LDT2	Aggregated	20	DSL	802.8824255
Riverside (SC)	2035	LDT2	Aggregated	25	GAS	485930.9163
Riverside (SC)	2035	LDT2	Aggregated	25	DSL	4834.018063
Riverside (SC)	2035	LDT2	Aggregated	30	GAS	1007963.431
Riverside (SC)	2035	LDT2	Aggregated	30	DSL	10027.17314
Riverside (SC)	2035	LDT2	Aggregated	35	GAS	1085704.363
Riverside (SC)	2035	LDT2	Aggregated	35	DSL	10800.5363
Riverside (SC)	2035	LDT2	Aggregated	40	GAS	886963.949
Riverside (SC)	2035	LDT2	Aggregated	40	DSL	8823.475944
Riverside (SC)	2035	LDT2	Aggregated	45	GAS	876843.0127
Riverside (SC)	2035	LDT2	Aggregated	45	DSL	8722.793341
Riverside (SC)	2035	LDT2	Aggregated	50	GAS	1042898.585
Riverside (SC)	2035	LDT2	Aggregated	50	DSL	10374.70642
Riverside (SC)	2035	LDT2	Aggregated	55	GAS	883013.797
Riverside (SC)	2035	LDT2	Aggregated	55	DSL	8784.180016
Riverside (SC)	2035	LDT2	Aggregated	60	GAS	1093528.2
Riverside (SC)	2035	LDT2	Aggregated	60	DSL	10878.36747
Riverside (SC)	2035	LDT2	Aggregated	65	GAS	777105.2822
Riverside (SC)	2035	LDT2	Aggregated	65	DSL	7730.607056

Riverside (SC)	2035	LDT2	Aggregated	70	GAS	169730.0033
Riverside (SC)	2035	LDT2	Aggregated	70	DSL	1688.466146
Riverside (SC)	2035	LHDT1	Aggregated	5	GAS	1313.561899
Riverside (SC)	2035	LHDT1	Aggregated	5	DSL	999.0731347
Riverside (SC)	2035	LHDT1	Aggregated	10	GAS	380.6958311
Riverside (SC)	2035	LHDT1	Aggregated	10	DSL	259.9443182
Riverside (SC)	2035	LHDT1	Aggregated	15	GAS	1188.691101
Riverside (SC)	2035	LHDT1	Aggregated	15	DSL	1219.582273
Riverside (SC)	2035	LHDT1	Aggregated	20	GAS	3026.500602
Riverside (SC)	2035	LHDT1	Aggregated	20	DSL	2339.545173
Riverside (SC)	2035	LHDT1	Aggregated	25	GAS	12197.18244
Riverside (SC)	2035	LHDT1	Aggregated	25	DSL	9982.015587
Riverside (SC)	2035	LHDT1	Aggregated	30	GAS	27290.98842
Riverside (SC)	2035	LHDT1	Aggregated	30	DSL	22751.84936
Riverside (SC)	2035	LHDT1	Aggregated	35	GAS	31304.98151
Riverside (SC)	2035	LHDT1	Aggregated	35	DSL	25682.68301
Riverside (SC)	2035	LHDT1	Aggregated	40	GAS	31402.75773
Riverside (SC)	2035	LHDT1	Aggregated	40	DSL	27969.01361
Riverside (SC)	2035	LHDT1	Aggregated	45	GAS	47089.13816
Riverside (SC)	2035	LHDT1	Aggregated	45	DSL	36636.53073
Riverside (SC)	2035	LHDT1	Aggregated	50	GAS	71729.75945
Riverside (SC)	2035	LHDT1	Aggregated	50	DSL	55574.04601
Riverside (SC)	2035	LHDT1	Aggregated	55	GAS	71938.05602
Riverside (SC)	2035	LHDT1	Aggregated	55	DSL	57986.66018
Riverside (SC)	2035	LHDT1	Aggregated	60	GAS	93784.53451
Riverside (SC)	2035	LHDT1	Aggregated	60	DSL	97622.72715
Riverside (SC)	2035	LHDT1	Aggregated	65	GAS	61632.5001
Riverside (SC)	2035	LHDT1	Aggregated	65	DSL	119462.066
Riverside (SC)	2035	LHDT1	Aggregated	70	GAS	18404.17142
Riverside (SC)	2035	LHDT1	Aggregated	70	DSL	39987.1597
Riverside (SC)	2035	LHDT2	Aggregated	5	GAS	202.4472624
Riverside (SC)	2035	LHDT2	Aggregated	5	DSL	396.4438152
Riverside (SC)	2035	LHDT2	Aggregated	10	GAS	58.67316102
Riverside (SC)	2035	LHDT2	Aggregated	10	DSL	103.1489224
Riverside (SC)	2035	LHDT2	Aggregated	15	GAS	183.2020702
Riverside (SC)	2035	LHDT2	Aggregated	15	DSL	483.9444006
Riverside (SC)	2035	LHDT2	Aggregated	20	GAS	466.446813
Riverside (SC)	2035	LHDT2	Aggregated	20	DSL	928.3586776
Riverside (SC)	2035	LHDT2	Aggregated	25	GAS	1879.839995
Riverside (SC)	2035	LHDT2	Aggregated	25	DSL	3960.979637
Riverside (SC)	2035	LHDT2	Aggregated	30	GAS	4206.110042
Riverside (SC)	2035	LHDT2	Aggregated	30	DSL	9028.197887
Riverside (SC)	2035	LHDT2	Aggregated	35	GAS	4824.750025
Riverside (SC)	2035	LHDT2	Aggregated	35	DSL	10191.18669
Riverside (SC)	2035	LHDT2	Aggregated	40	GAS	4839.819379

Riverside (SC)	2035	LHDT2	Aggregated	40	DSL	11098.42921
Riverside (SC)	2035	LHDT2	Aggregated	45	GAS	7257.417497
Riverside (SC)	2035	LHDT2	Aggregated	45	DSL	14537.8006
Riverside (SC)	2035	LHDT2	Aggregated	50	GAS	11055.05073
Riverside (SC)	2035	LHDT2	Aggregated	50	DSL	22052.42646
Riverside (SC)	2035	LHDT2	Aggregated	55	GAS	11087.15357
Riverside (SC)	2035	LHDT2	Aggregated	55	DSL	23009.77976
Riverside (SC)	2035	LHDT2	Aggregated	60	GAS	14454.15117
Riverside (SC)	2035	LHDT2	Aggregated	60	DSL	38737.83115
Riverside (SC)	2035	LHDT2	Aggregated	65	GAS	9498.852646
Riverside (SC)	2035	LHDT2	Aggregated	65	DSL	47403.93428
Riverside (SC)	2035	LHDT2	Aggregated	70	GAS	2836.466346
Riverside (SC)	2035	LHDT2	Aggregated	70	DSL	15867.36906
Riverside (SC)	2035	MCY	Aggregated	5	GAS	378.5808762
Riverside (SC)	2035	MCY	Aggregated	10	GAS	160.8124896
Riverside (SC)	2035	MCY	Aggregated	15	GAS	536.5349719
Riverside (SC)	2035	MCY	Aggregated	20	GAS	1696.176451
Riverside (SC)	2035	MCY	Aggregated	25	GAS	10212.38894
Riverside (SC)	2035	MCY	Aggregated	30	GAS	21183.49388
Riverside (SC)	2035	MCY	Aggregated	35	GAS	22817.30767
Riverside (SC)	2035	MCY	Aggregated	40	GAS	18640.55263
Riverside (SC)	2035	MCY	Aggregated	45	GAS	18427.84968
Riverside (SC)	2035	MCY	Aggregated	50	GAS	21917.69573
Riverside (SC)	2035	MCY	Aggregated	55	GAS	18557.53571
Riverside (SC)	2035	MCY	Aggregated	60	GAS	22981.73448
Riverside (SC)	2035	MCY	Aggregated	65	GAS	16331.74824
Riverside (SC)	2035	MCY	Aggregated	70	GAS	3567.068383
Riverside (SC)	2035	MDV	Aggregated	5	GAS	11698.84206
Riverside (SC)	2035	MDV	Aggregated	5	DSL	408.578599
Riverside (SC)	2035	MDV	Aggregated	10	GAS	4969.400295
Riverside (SC)	2035	MDV	Aggregated	10	DSL	173.5548356
Riverside (SC)	2035	MDV	Aggregated	15	GAS	16579.91275
Riverside (SC)	2035	MDV	Aggregated	15	DSL	579.0485493
Riverside (SC)	2035	MDV	Aggregated	20	GAS	52414.95716
Riverside (SC)	2035	MDV	Aggregated	20	DSL	1830.576877
Riverside (SC)	2035	MDV	Aggregated	25	GAS	315581.5118
Riverside (SC)	2035	MDV	Aggregated	25	DSL	11021.59097
Riverside (SC)	2035	MDV	Aggregated	30	GAS	654608.7371
Riverside (SC)	2035	MDV	Aggregated	30	DSL	22862.01654
Riverside (SC)	2035	MDV	Aggregated	35	GAS	705096.5739
Riverside (SC)	2035	MDV	Aggregated	35	DSL	24625.28931
Riverside (SC)	2035	MDV	Aggregated	40	GAS	576027.1976
Riverside (SC)	2035	MDV	Aggregated	40	DSL	20117.57951
Riverside (SC)	2035	MDV	Aggregated	45	GAS	569454.2872
Riverside (SC)	2035	MDV	Aggregated	45	DSL	19888.02256

Riverside (SC)	2035	MDV	Aggregated	50	GAS	677296.9182
Riverside (SC)	2035	MDV	Aggregated	50	DSL	23654.39456
Riverside (SC)	2035	MDV	Aggregated	55	GAS	573461.8228
Riverside (SC)	2035	MDV	Aggregated	55	DSL	20027.98456
Riverside (SC)	2035	MDV	Aggregated	60	GAS	710177.6633
Riverside (SC)	2035	MDV	Aggregated	60	DSL	24802.74485
Riverside (SC)	2035	MDV	Aggregated	65	GAS	504680.9157
Riverside (SC)	2035	MDV	Aggregated	65	DSL	17625.83172
Riverside (SC)	2035	MDV	Aggregated	70	GAS	110228.9425
Riverside (SC)	2035	MDV	Aggregated	70	DSL	3849.713216
Riverside (SC)	2035	MH	Aggregated	5	GAS	71.84973996
Riverside (SC)	2035	MH	Aggregated	5	DSL	31.50088609
Riverside (SC)	2035	MH	Aggregated	10	GAS	21.66796489
Riverside (SC)	2035	MH	Aggregated	10	DSL	9.007826242
Riverside (SC)	2035	MH	Aggregated	15	GAS	56.01644306
Riverside (SC)	2035	MH	Aggregated	15	DSL	24.88791982
Riverside (SC)	2035	MH	Aggregated	20	GAS	158.3490937
Riverside (SC)	2035	MH	Aggregated	20	DSL	66.7060582
Riverside (SC)	2035	MH	Aggregated	25	GAS	643.3990093
Riverside (SC)	2035	MH	Aggregated	25	DSL	277.6911303
Riverside (SC)	2035	MH	Aggregated	30	GAS	1461.88251
Riverside (SC)	2035	MH	Aggregated	30	DSL	642.6912276
Riverside (SC)	2035	MH	Aggregated	35	GAS	1711.368722
Riverside (SC)	2035	MH	Aggregated	35	DSL	760.7974975
Riverside (SC)	2035	MH	Aggregated	40	GAS	1653.300908
Riverside (SC)	2035	MH	Aggregated	40	DSL	740.82901
Riverside (SC)	2035	MH	Aggregated	45	GAS	2395.798554
Riverside (SC)	2035	MH	Aggregated	45	DSL	981.4054723
Riverside (SC)	2035	MH	Aggregated	50	GAS	3865.930845
Riverside (SC)	2035	MH	Aggregated	50	DSL	1640.944101
Riverside (SC)	2035	MH	Aggregated	55	GAS	4236.867909
Riverside (SC)	2035	MH	Aggregated	55	DSL	1957.417149
Riverside (SC)	2035	MH	Aggregated	60	GAS	5536.408937
Riverside (SC)	2035	MH	Aggregated	60	DSL	2839.172183
Riverside (SC)	2035	MH	Aggregated	65	GAS	2702.255415
Riverside (SC)	2035	MH	Aggregated	65	DSL	1798.82041
Riverside (SC)	2035	MH	Aggregated	70	GAS	757.7547732
Riverside (SC)	2035	MH	Aggregated	70	DSL	543.7783001
Riverside (SC)	2035	MHDT	Aggregated	5	GAS	200.8932299
Riverside (SC)	2035	MHDT	Aggregated	5	DSL	2080.451471
Riverside (SC)	2035	MHDT	Aggregated	10	GAS	60.58403904
Riverside (SC)	2035	MHDT	Aggregated	10	DSL	594.9148636
Riverside (SC)	2035	MHDT	Aggregated	15	GAS	156.6230327
Riverside (SC)	2035	MHDT	Aggregated	15	DSL	1643.703267
Riverside (SC)	2035	MHDT	Aggregated	20	GAS	442.7470564

Riverside (SC)	2035	MHDT	Aggregated	20	DSL	4405.549624
Riverside (SC)	2035	MHDT	Aggregated	25	GAS	1798.955781
Riverside (SC)	2035	MHDT	Aggregated	25	DSL	18339.89427
Riverside (SC)	2035	MHDT	Aggregated	30	GAS	4087.451107
Riverside (SC)	2035	MHDT	Aggregated	30	DSL	42446.04123
Riverside (SC)	2035	MHDT	Aggregated	35	GAS	4785.019267
Riverside (SC)	2035	MHDT	Aggregated	35	DSL	50246.27777
Riverside (SC)	2035	MHDT	Aggregated	40	GAS	4622.660564
Riverside (SC)	2035	MHDT	Aggregated	40	DSL	48927.47458
Riverside (SC)	2035	MHDT	Aggregated	45	GAS	6698.698003
Riverside (SC)	2035	MHDT	Aggregated	45	DSL	64816.15953
Riverside (SC)	2035	MHDT	Aggregated	50	GAS	10809.21566
Riverside (SC)	2035	MHDT	Aggregated	50	DSL	108374.8742
Riverside (SC)	2035	MHDT	Aggregated	55	GAS	11846.36269
Riverside (SC)	2035	MHDT	Aggregated	55	DSL	129276.09
Riverside (SC)	2035	MHDT	Aggregated	60	GAS	15479.90395
Riverside (SC)	2035	MHDT	Aggregated	60	DSL	187510.914
Riverside (SC)	2035	MHDT	Aggregated	65	GAS	7555.557176
Riverside (SC)	2035	MHDT	Aggregated	65	DSL	118801.692
Riverside (SC)	2035	MHDT	Aggregated	70	GAS	2118.696657
Riverside (SC)	2035	MHDT	Aggregated	70	DSL	35913.41402
Riverside (SC)	2035	MHDT	Aggregated	75	DSL	0
Riverside (SC)	2035	OBUS	Aggregated	5	GAS	40.89771317
Riverside (SC)	2035	OBUS	Aggregated	5	DSL	45.49368476
Riverside (SC)	2035	OBUS	Aggregated	10	GAS	12.33365929
Riverside (SC)	2035	OBUS	Aggregated	10	DSL	13.41703953
Riverside (SC)	2035	OBUS	Aggregated	15	GAS	31.88521521
Riverside (SC)	2035	OBUS	Aggregated	15	DSL	39.37279003
Riverside (SC)	2035	OBUS	Aggregated	20	GAS	90.13415799
Riverside (SC)	2035	OBUS	Aggregated	20	DSL	98.55649466
Riverside (SC)	2035	OBUS	Aggregated	25	GAS	366.2302487
Riverside (SC)	2035	OBUS	Aggregated	25	DSL	415.3002986
Riverside (SC)	2035	OBUS	Aggregated	30	GAS	832.1206397
Riverside (SC)	2035	OBUS	Aggregated	30	DSL	961.2287332
Riverside (SC)	2035	OBUS	Aggregated	35	GAS	974.1311124
Riverside (SC)	2035	OBUS	Aggregated	35	DSL	1127.494547
Riverside (SC)	2035	OBUS	Aggregated	40	GAS	941.0782331
Riverside (SC)	2035	OBUS	Aggregated	40	DSL	1117.538813
Riverside (SC)	2035	OBUS	Aggregated	45	GAS	1363.716586
Riverside (SC)	2035	OBUS	Aggregated	45	DSL	1471.512802
Riverside (SC)	2035	OBUS	Aggregated	50	GAS	2200.533098
Riverside (SC)	2035	OBUS	Aggregated	50	DSL	2456.138984
Riverside (SC)	2035	OBUS	Aggregated	55	GAS	2411.674817
Riverside (SC)	2035	OBUS	Aggregated	55	DSL	2874.80684
Riverside (SC)	2035	OBUS	Aggregated	60	GAS	3151.388785

Riverside (SC)	2035	OBUS	Aggregated	60	DSL	4260.427498
Riverside (SC)	2035	OBUS	Aggregated	65	GAS	1538.155419
Riverside (SC)	2035	OBUS	Aggregated	65	DSL	3119.98946
Riverside (SC)	2035	OBUS	Aggregated	70	GAS	431.3228883
Riverside (SC)	2035	OBUS	Aggregated	70	DSL	981.5059695
Riverside (SC)	2035	OBUS	Aggregated	75	DSL	0
Riverside (SC)	2035	SBUS	Aggregated	5	GAS	160.3803542
Riverside (SC)	2035	SBUS	Aggregated	5	DSL	347.0659663
Riverside (SC)	2035	SBUS	Aggregated	10	GAS	562.1249213
Riverside (SC)	2035	SBUS	Aggregated	10	DSL	1216.448423
Riverside (SC)	2035	SBUS	Aggregated	15	GAS	1124.249843
Riverside (SC)	2035	SBUS	Aggregated	15	DSL	2432.896846
Riverside (SC)	2035	SBUS	Aggregated	20	GAS	1525.986311
Riverside (SC)	2035	SBUS	Aggregated	20	DSL	3302.261778
Riverside (SC)	2035	SBUS	Aggregated	25	GAS	2408.871941
Riverside (SC)	2035	SBUS	Aggregated	25	DSL	5212.842133
Riverside (SC)	2035	SBUS	Aggregated	30	GAS	2890.013004
Riverside (SC)	2035	SBUS	Aggregated	30	DSL	6254.040032
Riverside (SC)	2035	SBUS	Aggregated	35	GAS	2966.234773
Riverside (SC)	2035	SBUS	Aggregated	35	DSL	6418.98531
Riverside (SC)	2035	SBUS	Aggregated	40	GAS	2002.365285
Riverside (SC)	2035	SBUS	Aggregated	40	DSL	4333.15443
Riverside (SC)	2035	SBUS	Aggregated	45	GAS	960.686664
Riverside (SC)	2035	SBUS	Aggregated	45	DSL	2078.943191
Riverside (SC)	2035	SBUS	Aggregated	50	GAS	481.1410627
Riverside (SC)	2035	SBUS	Aggregated	50	DSL	1041.197899
Riverside (SC)	2035	SBUS	Aggregated	55	GAS	716.1477251
Riverside (SC)	2035	SBUS	Aggregated	55	DSL	1549.756536
Riverside (SC)	2035	SBUS	Aggregated	60	GAS	398.569841
Riverside (SC)	2035	SBUS	Aggregated	60	DSL	862.5122925
Riverside (SC)	2035	SBUS	Aggregated	65	DSL	0
Riverside (SC)	2035	SBUS	Aggregated	70	DSL	0
Riverside (SC)	2035	SBUS	Aggregated	75	DSL	0
Riverside (SC)	2035	UBUS	Aggregated	5	GAS	175.3464744
Riverside (SC)	2035	UBUS	Aggregated	5	DSL	0
Riverside (SC)	2035	UBUS	Aggregated	5	NG	405.6287326
Riverside (SC)	2035	UBUS	Aggregated	10	GAS	430.7867327
Riverside (SC)	2035	UBUS	Aggregated	10	DSL	0
Riverside (SC)	2035	UBUS	Aggregated	10	NG	1259.666858
Riverside (SC)	2035	UBUS	Aggregated	15	GAS	770.1265169
Riverside (SC)	2035	UBUS	Aggregated	15	DSL	0
Riverside (SC)	2035	UBUS	Aggregated	15	NG	2203.010532
Riverside (SC)	2035	UBUS	Aggregated	20	GAS	7015.625057
Riverside (SC)	2035	UBUS	Aggregated	20	DSL	0
Riverside (SC)	2035	UBUS	Aggregated	20	NG	20816.78319

Riverside (SC)	2035	UBUS	Aggregated	25	GAS	415.4419654
Riverside (SC)	2035	UBUS	Aggregated	25	DSL	0
Riverside (SC)	2035	UBUS	Aggregated	25	NG	107.888092
Riverside (SC)	2035	UBUS	Aggregated	30	GAS	934.4376574
Riverside (SC)	2035	UBUS	Aggregated	30	DSL	0
Riverside (SC)	2035	UBUS	Aggregated	30	NG	242.6685418
Riverside (SC)	2035	UBUS	Aggregated	35	GAS	1071.980789
Riverside (SC)	2035	UBUS	Aggregated	35	DSL	0
Riverside (SC)	2035	UBUS	Aggregated	35	NG	278.3877691
Riverside (SC)	2035	UBUS	Aggregated	40	GAS	1080.323954
Riverside (SC)	2035	UBUS	Aggregated	40	DSL	0
Riverside (SC)	2035	UBUS	Aggregated	40	NG	280.5544452
Riverside (SC)	2035	UBUS	Aggregated	45	GAS	1585.158764
Riverside (SC)	2035	UBUS	Aggregated	45	DSL	0
Riverside (SC)	2035	UBUS	Aggregated	45	NG	411.6573885
Riverside (SC)	2035	UBUS	Aggregated	50	GAS	2446.104904
Riverside (SC)	2035	UBUS	Aggregated	50	DSL	0
Riverside (SC)	2035	UBUS	Aggregated	50	NG	635.2405701
Riverside (SC)	2035	UBUS	Aggregated	55	GAS	2496.451572
Riverside (SC)	2035	UBUS	Aggregated	55	DSL	0
Riverside (SC)	2035	UBUS	Aggregated	55	NG	648.3153347
Riverside (SC)	2035	UBUS	Aggregated	60	GAS	3361.75269
Riverside (SC)	2035	UBUS	Aggregated	60	DSL	0
Riverside (SC)	2035	UBUS	Aggregated	60	NG	873.0294812
Riverside (SC)	2035	UBUS	Aggregated	65	GAS	2406.551593
Riverside (SC)	2035	UBUS	Aggregated	65	DSL	0
Riverside (SC)	2035	UBUS	Aggregated	65	NG	624.9687833
Riverside (SC)	2035	UBUS	Aggregated	70	GAS	740.3679951
Riverside (SC)	2035	UBUS	Aggregated	70	DSL	0
Riverside (SC)	2035	UBUS	Aggregated	70	NG	192.2696719
Riverside (SC)	2035	UBUS	Aggregated	75	GAS	0
Riverside (SC)	2035	UBUS	Aggregated	75	DSL	0
Riverside (SC)	2035	UBUS	Aggregated	75	NG	0

Additional Documentation Attachment to Comment Letter 1-F5

ROG_RUNEX	TOG_RUNEX	CO_RUNEX	NOx_RUNEX	SOx_RUNEX	CO2_RUNEX	CH4_RUNEX
2.079525873	3.034439273	54.02697772	5.342909905	0.03740943	3780.329997	0.481194128
0.123238503	0.140297654	2.071754305	13.56760525	0.025866476	2737.916315	0.005724109
0.240968091	12.88650769	45.09000722	1.533926869	0	4338.149181	12.55803106
1.305022006	1.904285047	49.07708796	4.664462615	0.030433756	3075.418134	0.301976972
0.07408091	0.084335477	1.209932227	11.43761288	0.024065761	2547.314096	0.003440866
0.192787121	10.42059312	36.51802946	1.25039509	0	3847.144908	10.15732123
0.863389557	1.259856015	44.67240577	4.145561994	0.024950752	2521.344888	0.199784956
0.043162503	0.049137224	0.690712878	7.218152021	0.016914126	1790.327405	0.002004786
0.129664147	7.297445497	25.71791325	0.884454588	0	3227.699041	7.119140185
0.607093475	0.885869374	41.06825291	3.689598769	0.020796598	2101.555785	0.140479048
0.026229473	0.029860258	0.419216543	4.786986323	0.015525669	1643.361918	0.001218291
0.089725484	5.251423231	18.60431002	0.647344035	0	2819.190301	5.127176444
0.448207738	0.65402368	37.68253651	3.367897281	0.017813036	1800.058331	0.103713512
0.023060258	0.026252348	0.355233704	4.375012671	0.012366343	1308.953468	0.001071089
0.065895404	3.84943058	13.63447816	0.494964054	0	2601.290584	3.758213442
0.349344843	0.509763175	34.69416084	3.119402841	0.015823595	1599.019617	0.080837026
0.018648437	0.021229826	0.272727934	3.260869372	0.010844866	1147.908012	0.000866172
0.049136589	2.840671195	10.04823208	0.403885765	0	2462.534565	2.772780025
0.28741642	0.419397365	32.04691754	2.932615592	0.014664879	1481.928018	0.066507032
0.015336075	0.017458954	0.205495384	2.384016711	0.009710896	1027.8795	0.000712321
0.036718038	2.096822451	7.405425157	0.343562079	0	2352.664688	2.046200558
0.249021108	0.363371017	29.63067034	2.810881645	0.014173059	1432.228205	0.057622507
0.013157505	0.014978818	0.154105098	1.7200853	0.00889308	941.3152361	0.000611132
0.027540623	1.548483832	5.45788394	0.301119576	0	2262.469302	1.510618216
0.227810331	0.332420301	27.49379012	2.732065965	0.014187094	1433.646507	0.052714417
0.012093311	0.013767314	0.118283062	1.276906246	0.008424104	891.6750764	0.000561703
0.020794365	1.144512152	4.022722449	0.270129664	0	2186.4614	1.116027404
0.219964064	0.320971045	25.5919458	2.697116112	0.01456075	1471.405514	0.050898821
0.01214452	0.013825612	0.098060237	1.055466491	0.008299	878.4330896	0.000564082
0.015882369	0.847218561	2.965166874	0.247049317	0	2121.127419	0.825577594
0.224423474	0.327478207	23.92390168	2.697841199	0.015116281	1527.54344	0.051930711
0.013305393	0.015147177	0.093409419	1.060395542	0.008532753	903.1753696	0.000618001
0	0	0	0	0	0	0
0.240958193	0.35160563	22.3710159	2.755440539	0.015690285	1585.548269	0.05575678
0.015575506	0.017731528	0.104357177	1.291935323	0.009115437	964.8513267	0.000723442
0	0	0	0	0	0	0

0.269620006	0.39342888	20.7282161	2.928254516	0.016134174	1630.404502	0.062389011
0.018947712	0.021570528	0.130899931	1.754092223	0.010043791	1063.115779	0.000880072
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0.291247503	0.424987672	19.99024807	3.030103838	0.016268898	1644.018698	0.067393529
0.023236131	0.026452566	0.171281369	1.755671271	0.010043791	1063.115779	0.001079258
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0	0	0	0	0	0	0
0.017705898	0.025836404	0.792958894	0.032836043	0.004871785	492.3077843	0.005827946
0.094536323	0.107623318	2.796971504	0.053307347	0.003823342	404.4325597	0.004391031
0.011165063	0.016292034	0.721868041	0.028431344	0.003957087	399.8749216	0.003672329
0.070750382	0.080544606	2.093688644	0.044503067	0.003185205	336.9304972	0.00328622
0.007328282	0.010693412	0.647615898	0.025405224	0.003211034	324.4841521	0.002408578
0.034606245	0.039396909	1.022818473	0.030233034	0.002619822	277.1243751	0.001607394
0.005182553	0.007562369	0.599699986	0.022622467	0.002683671	271.1926782	0.001702333
0.013522366	0.015394314	0.398236849	0.020307035	0.002149105	227.3319689	0.000628088
0.003823737	0.005579589	0.548691538	0.020683855	0.002290615	231.4732044	0.001255331
0.008144367	0.009271821	0.239310109	0.015756952	0.001801469	190.5591261	0.00037829
0.002982926	0.004352679	0.50510658	0.019160194	0.002032803	205.4205736	0.000978911
0.006160766	0.007013623	0.180879851	0.01337127	0.001560403	165.0591697	0.000286156
0.002455802	0.0035835	0.466759569	0.018027828	0.00188523	190.5078824	0.000805734
0.004905898	0.005585038	0.143928796	0.011792567	0.001410573	149.2101645	0.00022787
0.002123717	0.003098923	0.43015308	0.017298194	0.001820961	184.0133378	0.000696721
0.004051288	0.004612122	0.118755115	0.010683877	0.00131998	139.6273255	0.000188175
0.00194008	0.00283096	0.398410138	0.016821321	0.001825462	184.4681627	0.000636536
0.003437862	0.003913778	0.100665707	0.009862935	0.001275	134.8692701	0.000159682
0.001872714	0.002732661	0.371181933	0.016619646	0.001879246	189.9031629	0.000614598
0.002980246	0.003392812	0.087143501	0.009237338	0.001278245	135.2125907	0.000138427
0.001918941	0.002800115	0.349919038	0.016598221	0.00196455	198.523403	0.000630046
0.002629118	0.002993076	0.076734295	0.008743375	0.001337583	141.4893289	0.000122117
0.002060163	0.003006185	0.327773064	0.016943703	0.002044256	206.5778733	0.00067678
0.002487719	0.002832102	0.07250616	0.008569705	0.001450101	153.3914232	0.00011555
0.00225432	0.003289498	0.293495634	0.018079385	0.002062314	208.4027045	0.000740942
0.002499711	0.002845755	0.072790511	0.008659087	0.001630207	172.4430041	0.000116107
0.002424652	0.003538046	0.281057496	0.018664255	0.002069558	209.1347981	0.000797175
0.002508073	0.002855274	0.072989541	0.008697534	0.001760365	186.2111759	0.000116495
0.032586749	0.047550508	0.95456619	0.047917889	0.005706764	576.6848403	0.009161206
0.265571185	0.302335138	2.682236235	0.175075651	0.007211401	762.8208968	0.012335274
0.020779219	0.030320987	0.865863315	0.041167119	0.004634997	468.379767	0.00582326
0.198382523	0.225845313	2.005315497	0.151419786	0.006070316	642.1170964	0.009214489
0.013788	0.020119417	0.775112048	0.036581178	0.003765611	380.5257338	0.003852325
0.098212604	0.11180852	0.991611672	0.112374599	0.005033292	532.4208995	0.004561788
0.009839487	0.014357756	0.71590332	0.032428701	0.003144725	317.7834764	0.002742117
0.039708065	0.045204992	0.399827981	0.085592757	0.004135234	437.4244166	0.001844364
0.007316501	0.010676221	0.654044891	0.029566842	0.002684782	271.3048993	0.002034602

0.024449605	0.02783425	0.246478331	0.074078858	0.003467244	366.7646051	0.001135637
0.005740501	0.008376526	0.601432624	0.027345231	0.002382587	240.7672176	0.001593813
0.01866547	0.021249396	0.188952114	0.068701869	0.002998185	317.1475893	0.000866975
0.004742413	0.006920117	0.555407443	0.025718572	0.002209449	223.2711327	0.001315446
0.015004043	0.017081106	0.152799231	0.065626694	0.002705977	286.2378883	0.000696909
0.004105821	0.005991205	0.511846123	0.024699181	0.002134756	215.7232403	0.001138521
0.012530674	0.014265339	0.128678425	0.063911757	0.002525544	267.151697	0.000582026
0.003745523	0.005465459	0.474239055	0.024067243	0.002140268	216.280245	0.001039017
0.010790205	0.012283931	0.112107562	0.063013056	0.002435053	257.579558	0.000501184
0.003601439	0.005255211	0.442140605	0.023857473	0.00220318	222.6376872	0.001000117
0.009540264	0.010860956	0.100788257	0.062679307	0.002439098	258.0074558	0.000443127
0.003667085	0.005351001	0.417173723	0.023937058	0.002301658	232.589133	0.001020108
0.008646182	0.009843103	0.09357947	0.062705075	0.002550276	269.7678135	0.000401599
0.003905496	0.005698891	0.391445114	0.02459432	0.00239494	242.0155457	0.001088853
0.008399614	0.009562402	0.093796651	0.063664156	0.002762471	292.2137657	0.000390146
0.004237684	0.006183618	0.351942837	0.02648923	0.002423772	244.9291316	0.001184372
0.008667274	0.009867115	0.100678629	0.06549219	0.003102877	328.2218199	0.000402578
0.004535553	0.006618269	0.337669569	0.027493179	0.002434355	245.9985001	0.001269407
0.008853891	0.010079567	0.105495645	0.06636005	0.003347707	354.1199649	0.000411246
0.03008729	0.043903302	0.980203762	0.044712941	0.00566359	572.321944	0.00900618
0.26335013	0.299806614	2.667976241	0.151669656	0.005003561	529.2759228	0.01223211
0.019080808	0.02784267	0.890865304	0.038463202	0.004599918	464.8349301	0.005698234
0.197134791	0.224424853	1.997184639	0.126070516	0.00421183	445.5267549	0.009156534
0.012594853	0.018378379	0.798612729	0.034210817	0.003739407	377.8778168	0.003752792
0.096280628	0.109609094	0.975403925	0.084652749	0.003492301	369.4151066	0.004472051
0.008948308	0.013057349	0.738558592	0.030349633	0.003121713	315.4580554	0.002661158
0.03745849	0.042644	0.379465849	0.055803828	0.002869192	303.5027131	0.001739875
0.006628928	0.009672916	0.675318345	0.027684337	0.002665499	269.3562708	0.00196817
0.02249543	0.025609551	0.227890009	0.042499799	0.002405714	254.4760843	0.00104487
0.005186701	0.007568422	0.621368019	0.025611004	0.002365494	239.0399131	0.001538104
0.01699565	0.019348417	0.172188214	0.035455367	0.002080262	220.0497964	0.000789415
0.004277796	0.006242149	0.574017292	0.024089134	0.002193524	221.6619148	0.001267646
0.013516647	0.015387804	0.136957518	0.030743338	0.001877516	198.6033984	0.000627822
0.0037016	0.005401366	0.529025835	0.023131081	0.002119674	214.1990784	0.001096642
0.011144852	0.012687673	0.112944381	0.027387742	0.001752325	185.3606286	0.000517657
0.003379072	0.004930734	0.49007358	0.022531625	0.002125244	214.7620326	0.001001389
0.00943814	0.010744695	0.095671731	0.024864294	0.001689538	178.7190923	0.000438384
0.003255141	0.004749893	0.456721137	0.022322885	0.002187617	221.0649445	0.000965451
0.008158997	0.009288475	0.082735977	0.022904644	0.001692345	179.0159851	0.00037897
0.003324448	0.004851027	0.430675685	0.022379874	0.002284617	230.8670459	0.000987308
0.007169552	0.008162059	0.072744268	0.021327117	0.001769484	187.1757959	0.000333012
0.00355432	0.005186455	0.403729204	0.022969674	0.002377126	240.2153982	0.001057358
0.006757204	0.007692627	0.068614752	0.020673275	0.001916714	202.7497033	0.000313859
0.00387313	0.005651662	0.362381396	0.024702743	0.002409488	243.4856124	0.001154311
0.006761953	0.007698034	0.068736873	0.020767341	0.002152901	227.7335445	0.00031408

0.004155496	0.00606369	0.347377057	0.025616857	0.002421006	244.6495585	0.001239761
0.006765265	0.007701804	0.068822351	0.020799286	0.002322774	245.7027226	0.000314234
0.034911373	0.050942593	0.308769926	0.094578243	0.015849696	1601.657189	0.009833892
0.75795389	0.862880112	3.449662237	0.596649827	0.009681797	1024.139081	0.035205509
0.021916909	0.031981101	0.280581276	0.082491572	0.012866667	1300.21355	0.006173591
0.564463575	0.642604252	2.572707329	0.564918583	0.008139061	860.9486934	0.026218254
0.014475576	0.021122726	0.254982774	0.073510384	0.010522421	1063.320801	0.004077504
0.284975117	0.324425224	1.302802677	0.505820851	0.005315488	562.2715424	0.013236549
0.010192329	0.014872622	0.234718254	0.065299386	0.008746734	883.8825411	0.002870992
0.121393999	0.138198997	0.560044189	0.46757771	0.004530651	479.2515831	0.005638519
0.007521515	0.010975378	0.215275481	0.059646676	0.00747632	755.5035729	0.002118673
0.077139832	0.08781857	0.360410673	0.460318118	0.004018256	425.0505112	0.003582998
0.005861197	0.008552645	0.198161475	0.055266099	0.006633995	670.3842259	0.001650992
0.059639051	0.067895094	0.282609886	0.464878064	0.003649011	385.9918156	0.00277012
0.00482235	0.007036761	0.183047265	0.051956409	0.006149572	621.4318792	0.001358367
0.048550656	0.055271694	0.234279047	0.473856034	0.003649011	385.9918156	0.002255085
0.004176256	0.006093983	0.169172074	0.049834119	0.005952864	601.5539191	0.001176375
0.041151303	0.046848023	0.20330861	0.486268916	0.003549115	375.4248119	0.001911399
0.00382512	0.005581606	0.157155115	0.048338544	0.00597371	603.6604836	0.001077466
0.036103154	0.04110104	0.183981204	0.499485061	0.003461882	366.1973635	0.001676922
0.003692277	0.005387761	0.14624162	0.047742864	0.006148947	621.3686662	0.001040046
0.032702559	0.03722969	0.173635866	0.514178971	0.003629321	383.9089884	0.001518971
0.00376493	0.005493777	0.13663157	0.047809213	0.006401395	646.8792649	0.001060512
0.030583356	0.034817118	0.17145302	0.529574547	0.003792511	401.171269	0.001420538
0.004033537	0.005885728	0.12749335	0.049011217	0.006660875	673.1004987	0.001136173
0.030585601	0.034819674	0.182650661	0.548248465	0.003829836	405.1194298	0.001420643
0.004492043	0.006554779	0.117591686	0.052394913	0.006864219	693.6490039	0.001265326
0.032445927	0.036937531	0.208394111	0.569830169	0.003879695	410.393597	0.001507051
0.004851988	0.00708001	0.113397296	0.054169551	0.006927318	700.0252872	0.001366716
0.033742982	0.038414141	0.226413144	0.579619835	0.003835608	405.7300334	0.001567297
0.028442284	0.041502914	0.251834445	0.093242657	0.01821315	1840.490967	0.008505865
0.763605657	0.869314273	3.51951257	0.629058887	0.010294502	1088.950849	0.035468023
0.017855698	0.026054993	0.228843628	0.081349602	0.014785237	1494.0905	0.005339872
0.568569694	0.647278795	2.624818604	0.594818227	0.009149045	967.7846421	0.026408976
0.011793247	0.017208678	0.207965349	0.072577851	0.012091352	1221.865767	0.003526853
0.287377756	0.327160469	1.329104948	0.531382348	0.006090244	644.2251346	0.013348147
0.008303687	0.012116721	0.191437495	0.064395615	0.010050811	1015.663231	0.002483276
0.12277863	0.139775307	0.571255029	0.490174878	0.00519453	549.476646	0.005702833
0.006127776	0.008941637	0.175579863	0.058834927	0.008590928	868.1378292	0.001832555
0.078152524	0.088971452	0.367586034	0.482012407	0.004629139	489.6696642	0.003630035
0.004775115	0.006967837	0.161621586	0.054516271	0.007622999	770.3258603	0.001428032
0.060462242	0.068832243	0.288220659	0.486454102	0.004174745	441.6039303	0.002808356
0.003928767	0.005732847	0.149294353	0.051245046	0.007066369	714.0768647	0.001174925
0.049253209	0.056071504	0.238916366	0.495606178	0.004174745	441.6039303	0.002287717
0.003402394	0.004964766	0.137977671	0.049167801	0.006840384	691.2403878	0.00101751

0.041778457	0.047561996	0.20731868	0.508406456	0.004022264	425.474456	0.001940529
0.003116324	0.004547332	0.128176573	0.047677037	0.006864409	693.668219	0.000931959
0.036687865	0.041766695	0.187594328	0.522075129	0.003866383	408.9854581	0.001704081
0.003008097	0.004389407	0.119275467	0.04709063	0.007065859	714.0253123	0.000899592
0.033271829	0.037877765	0.177027636	0.537312568	0.004008789	424.049081	0.001545413
0.003067287	0.004475778	0.111437458	0.047149782	0.007356034	743.3483469	0.000917294
0.031162537	0.035476477	0.174780604	0.553298943	0.004149289	438.9112234	0.00144744
0.003286121	0.004795101	0.103984275	0.048371686	0.007654286	773.4875468	0.000982738
0.031206766	0.035526829	0.186174196	0.572752615	0.00416375	440.4408942	0.001449495
0.003659666	0.005340176	0.095908424	0.051903447	0.007888025	797.1074927	0.001094449
0.033146142	0.037734678	0.212391283	0.595276638	0.004174745	441.6039303	0.001539575
0.003952913	0.005768082	0.092487456	0.053719073	0.007960558	804.4371356	0.001182146
0.034498311	0.039274033	0.230741836	0.605489687	0.004124142	436.2511553	0.001602381
12.45703088	15.63741626	42.49114179	1.606270378	0.00529589	535.1648921	1.877905262
8.056562823	10.11182316	32.76244037	1.439361783	0.004196069	424.0248302	1.214168349
5.523529408	6.931165352	26.75438767	1.330867511	0.003391564	342.7272696	0.832111392
3.963711519	4.973210623	22.37612813	1.228227425	0.002798135	282.7595359	0.596988129
3.0086685	3.774353773	19.50293541	1.162940203	0.002383583	240.8678799	0.453018611
2.402645842	3.013708654	17.47590999	1.114393194	0.00210783	213.0022702	0.361682296
2.019639315	2.533000874	16.10035366	1.081886054	0.001944705	196.5179665	0.303962133
1.789829261	2.244519519	15.29206167	1.067391291	0.001871841	189.1548943	0.269318471
1.667111785	2.09043732	14.9293542	1.062874707	0.001867164	188.6823021	0.250811255
1.632953894	2.047459298	15.06663372	1.06903821	0.001914223	193.4377056	0.24564002
1.677586818	2.103349943	15.73250193	1.080270402	0.001992792	201.3773249	0.252337948
1.817566266	2.278762877	17.25296621	1.108905407	0.002090125	211.2130833	0.273372864
2.101664239	2.634588526	20.45466147	1.183406818	0.002204357	222.7565522	0.3160249
2.294726183	2.876504441	22.63467139	1.218297237	0.002262281	228.6099648	0.345033505
0.036161033	0.052766095	1.024222939	0.052927023	0.006990107	706.3703136	0.010399648
0.108538353	0.123563699	3.118598546	0.061426101	0.00625673	661.835963	0.005041399
0.022946574	0.033483587	0.930657838	0.045405659	0.005676808	573.6576757	0.006583999
0.081215387	0.092458319	2.33436629	0.051430196	0.005313487	562.0598352	0.0037723
0.015155556	0.022114951	0.834179012	0.040302814	0.004619426	466.8062612	0.004338832
0.039769732	0.045275196	1.140770994	0.035208803	0.004506194	476.6644844	0.001847228
0.010772897	0.015719785	0.771316286	0.035699926	0.003853593	389.4166306	0.003078286
0.01559057	0.017748828	0.444593253	0.023936179	0.003742376	395.8679669	0.000724152
0.007983967	0.011650187	0.705206328	0.032531809	0.003290986	332.5635872	0.002277683
0.009410302	0.010713003	0.267361765	0.018790455	0.003164564	334.7471002	0.000437091
0.006248874	0.009118343	0.648822884	0.030078443	0.002920513	295.1261994	0.001780565
0.007124859	0.008111179	0.202165687	0.016111198	0.002733198	289.1172478	0.000330936
0.005154799	0.007521871	0.599354365	0.028287146	0.002708035	273.6546894	0.00146776
0.005678953	0.006465111	0.160943064	0.014351932	0.002479999	262.3339217	0.000263777
0.004460756	0.006509124	0.55237851	0.027169832	0.002617622	264.5181912	0.001269846
0.004695008	0.005344954	0.132875266	0.013129057	0.002319698	245.3772995	0.000218074
0.004071772	0.00594152	0.511718761	0.026484591	0.002624887	265.2523449	0.001159456
0.003990071	0.004542431	0.112730108	0.012234099	0.002232374	236.1402172	0.000185331

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0.003466028	0.003945842	0.097704698	0.011562063	0.002243561	237.3235095	0.00016099
0.004003728	0.00584223	0.449739252	0.02638142	0.00282025	284.994354	0.001142486
0.003066399	0.003490892	0.086185575	0.011039642	0.00236774	250.4592087	0.000142428
0.004278706	0.006243478	0.42164623	0.027138283	0.002934476	296.5371815	0.001222991
0.002909779	0.00331259	0.081605322	0.01088293	0.002563786	271.1969241	0.000135154
0.004660379	0.006800414	0.378574855	0.029273212	0.002982707	301.4110546	0.001334518
0.002932435	0.003338382	0.082129814	0.011029474	0.002878773	304.5161339	0.000136206
0.004998808	0.007294249	0.362947564	0.030410633	0.002999193	303.0770455	0.001432917
0.002948231	0.003356364	0.082496931	0.011094823	0.003099047	327.8166956	0.00013694
0.080122161	0.116914069	0.438129487	0.238881993	0.033431442	3378.342932	0.026958478
0.93530583	1.064783504	2.348300114	12.35169074	0.017219395	1821.465085	0.043443168
0.050281261	0.073370298	0.397988566	0.208548553	0.027139021	2742.475798	0.016917994
0.701728919	0.79887172	1.81026463	10.31035049	0.015635285	1653.898126	0.032593967
0.033265581	0.048541058	0.362268982	0.185348458	0.022194128	2242.780176	0.011192776
0.347829785	0.395981085	0.983618333	7.061661476	0.012837924	1357.993729	0.016156029
0.023390736	0.034131707	0.333041257	0.1649623	0.01844854	1864.27778	0.007870215
0.144936904	0.165001029	0.489538265	4.918431915	0.010535044	1114.39536	0.006732042
0.017269019	0.025198913	0.305584933	0.150578997	0.015768828	1593.485171	0.005810458
0.095714292	0.108964358	0.349959847	4.015803963	0.009449506	999.5673452	0.004445746
0.013459926	0.019640692	0.281350827	0.139468788	0.013992139	1413.945676	0.004528823
0.07568132	0.086158151	0.290379457	3.52666778	0.00886979	938.2451012	0.003515253
0.011073882	0.016158983	0.25988312	0.131117513	0.012970416	1310.697681	0.003725998
0.061695879	0.070236656	0.248536758	3.18428033	0.008388698	887.3552414	0.002865656
0.009594547	0.014000341	0.240288666	0.125674777	0.012555611	1268.78049	0.00322825
0.051750539	0.058914548	0.21876554	2.937964698	0.00800623	846.8977658	0.002403714
0.008777316	0.012807839	0.222959726	0.122150921	0.012599708	1273.236614	0.002953279
0.044873916	0.05108597	0.19832395	2.756285323	0.007722384	816.8726743	0.002084308
0.008475007	0.01236671	0.2075368	0.12058831	0.012969484	1310.603501	0.002851562
0.040544082	0.046156742	0.185738785	2.626247399	0.007537163	797.2799671	0.001883195
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0.010388203	0.015158442	0.16809459	0.130922529	0.014478671	1463.11119	0.003495289
0.042558154	0.048449629	0.194339518	2.571404669	0.00757324	801.0961502	0.001976745
0.01122149	0.016374372	0.16211007	0.135476221	0.014611824	1476.566647	0.003775663
0.047478903	0.054051575	0.21053646	2.635888962	0.007782512	823.2329797	0.002205304
0.071688364	0.104607492	0.420429258	0.174250898	0.032005067	3234.203689	0.018325476
0.054609225	0.062168446	0.811296673	7.193736772	0.018774609	1987.255943	0.002536457
0.044988568	0.065647213	0.381910012	0.152124369	0.025981158	2625.470384	0.011500289
0.034454891	0.039224271	0.49921018	5.440382813	0.015525229	1643.315421	0.00160034
0.029763989	0.043431542	0.347633483	0.135201213	0.021247257	2147.096106	0.007608477
0.019133411	0.021781932	0.27070932	3.826612197	0.012218224	1293.275287	0.000888697
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0.010110433	0.011509958	0.138225587	2.361600639	0.009105784	963.8295667	0.000469603
0.012043111	0.017573279	0.269984384	0.10173459	0.013395212	1353.624515	0.003078543
0.008173051	0.009304396	0.106079718	1.76404744	0.007995036	846.259092	0.000379617
0.009908226	0.01445806	0.249383962	0.095642807	0.012417081	1254.781619	0.002532809
0.006726371	0.007657462	0.080005109	1.287053666	0.007141627	755.9273907	0.000312423
0.008584609	0.012526641	0.230581115	0.091672639	0.012019975	1214.652933	0.002194457
0.005769362	0.006567979	0.059999218	0.931802377	0.006544978	692.7731965	0.000267972
0.007853401	0.011459664	0.213952256	0.089102185	0.012062193	1218.919119	0.002007541
0.005301244	0.006035063	0.046060195	0.69675108	0.006204517	656.7360886	0.000246229
0.007582913	0.011064969	0.199152409	0.087962349	0.012416194	1254.691971	0.001938397
0.00532142	0.006058032	0.038186708	0.582714358	0.006119678	647.7560908	0.000247166
0.007736644	0.011289293	0.186171958	0.087985996	0.01292611	1306.220426	0.001977695
0.00582942	0.00663635	0.036377809	0.589263504	0.006294492	666.2597602	0.000270761
0.008306652	0.012121048	0.174087651	0.089864512	0.013450227	1359.183995	0.002123404
0.006820466	0.007764581	0.040629149	0.717215426	0.006724435	711.7684127	0.000316793
0.009294723	0.013562838	0.161303647	0.095500577	0.013860993	1400.693066	0.002375981
0.008288911	0.009436294	0.05093027	0.969561552	0.007409385	784.2690896	0.000384998
0.010040297	0.014650777	0.155560898	0.098822238	0.013988463	1413.57427	0.00256657
0.010118583	0.011519237	0.066288601	0.970810515	0.007409385	784.2690896	0.000469982
0	0	0	0	0	0	0
0.116217064	0.169583667	0.73643897	0.273514673	0.032351183	3269.179691	0.027047574
0.075757978	0.086244691	1.218051559	9.1880461	0.022924926	2426.558982	0.003518762
0.072932887	0.106423498	0.668967276	0.238783545	0.026262257	2653.876227	0.016973907
0.048278471	0.054961364	0.762647198	7.041311812	0.019114299	2023.211512	0.00224241
0.048251672	0.070408726	0.608927278	0.212219942	0.021477365	2170.34923	0.011229768
0.027607083	0.031428562	0.427128707	5.067093369	0.015276563	1616.9946	0.001282277
0.033928225	0.049507986	0.559799255	0.188878236	0.017853011	1804.097839	0.007896226
0.018159871	0.020673631	0.274677741	3.947334285	0.012817154	1356.670854	0.000843479
0.025048684	0.036550982	0.513648728	0.172409668	0.015259979	1542.064549	0.005829662
0.014346445	0.016332335	0.211416414	3.092592724	0.011221843	1187.810353	0.000666355
0.0195236	0.028488792	0.472914332	0.159688721	0.013540698	1368.326312	0.004543791
0.011603724	0.013209956	0.162193415	2.311073472	0.009858949	1043.550692	0.000538963
0.016062648	0.023438579	0.436829894	0.150126693	0.012551901	1268.405531	0.003738312
0.009513674	0.010830594	0.121613349	1.68548482	0.00879032	930.4383289	0.000441886
0.013916875	0.020307472	0.403894152	0.143894879	0.012150331	1227.825776	0.003238919
0.008238813	0.009379261	0.092061841	1.232792665	0.008099179	857.2823671	0.000382672
0.012731483	0.01857775	0.374766447	0.13986014	0.012192784	1232.11574	0.002963039
0.007558238	0.008604478	0.070366561	0.930686625	0.007670915	811.9514834	0.000351061
0.012292984	0.017937893	0.348842504	0.138070984	0.01255036	1268.249809	0.002860986
0.007591863	0.008642758	0.058235884	0.791123978	0.007568308	801.0906832	0.000352622
0.012542204	0.018301554	0.32610548	0.138108103	0.013065536	1320.309796	0.002918988
0.008250579	0.009392656	0.054865959	0.80948988	0.007745716	819.8690369	0.000383218
0.013466269	0.019649947	0.304938173	0.141056733	0.013595085	1373.822264	0.003134048

0.009771964	0.011124638	0.062097202	0.995402126	0.008323996	881.0788276	0.000453882
0.015068072	0.021987295	0.282545253	0.14990344	0.014010084	1415.759056	0.003506841
0.01267827	0.014433245	0.083936008	1.376347457	0.009501385	1005.703142	0.000588873
0.016276753	0.023751	0.272486049	0.155117319	0.014138858	1428.772062	0.003788142
0.015621841	0.017784277	0.110344902	1.385809357	0.009583513	1014.396299	0.000725594
0	0	0	0	0	0	0
0.065904083	0.096167083	0.430458825	0.311533691	0.017577732	1776.280191	0.014276185
0.263262621	0.299704454	1.01820156	8.382773763	0.019863527	2102.515852	0.012227867
0.041545401	0.060622951	0.392744558	0.269697074	0.014269427	1441.966425	0.008999592
0.198051127	0.225466132	0.703739264	6.660241302	0.016734933	1771.360256	0.009198962
0.027576846	0.040240068	0.358641569	0.238127956	0.011669638	1179.250375	0.005973714
0.116494016	0.13261957	0.420966226	4.815696383	0.013343511	1412.384728	0.005410845
0.019314719	0.028183992	0.328449841	0.213559513	0.009700368	980.2499891	0.004183967
0.071142731	0.080990583	0.28434588	3.819229535	0.011377012	1204.234623	0.003304396
0.014263924	0.020813884	0.301457673	0.194818085	0.008291475	837.8772855	0.00308986
0.053375752	0.060764231	0.218765221	3.174696353	0.010008356	1059.365077	0.002479165
0.011113125	0.016216246	0.277440047	0.180574766	0.007357314	743.4776915	0.002407332
0.041948807	0.047755524	0.173265728	2.648595178	0.008926097	944.8100668	0.001948413
0.009120104	0.013308034	0.255643114	0.170585865	0.006820039	689.1844833	0.001975603
0.033263081	0.037867485	0.137997672	2.228058253	0.008089178	856.2237641	0.001544984
0.007900542	0.011528452	0.236332531	0.163556291	0.006601833	667.1340968	0.00171142
0.02681216	0.030523603	0.111721722	1.909579775	0.007491478	792.9584672	0.001245355
0.007224637	0.010542174	0.219202795	0.159154179	0.006624876	669.4627286	0.001565006
0.022222733	0.02529889	0.093524727	1.692196736	0.007129412	754.6344729	0.001032188
0.006989515	0.010199084	0.204429925	0.156499301	0.006819145	689.0941188	0.001514073
0.019219543	0.021879986	0.082733953	1.574354669	0.007000714	741.0119621	0.000892698
0.007043587	0.010277986	0.188818813	0.160246028	0.007098997	717.3739882	0.001525786
0.017599558	0.020035757	0.078853866	1.562099479	0.007103869	751.9307669	0.000817454
0.007585414	0.011068618	0.177080841	0.16265276	0.007386711	746.4483331	0.001643157
0.017700448	0.020150613	0.08154633	1.643789514	0.00744888	788.4495579	0.00082214
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0.062131497	0.090662134	0.428695039	0.32846496	0.027668592	2795.990419	0.020880181
0	0	0	0	0	0	0
0.125090459	8.93503278	57.16069305	0.697321972	0	2631.011166	8.754914874
0.045899123	0.066975893	0.445465785	0.349338046	0.024745634	2500.617179	0.015306417
0	0	0	0	0	0	0
0.104035567	7.43111191	50.77279635	0.575956191	0	2261.906992	7.28131097
0.029993401	0.0437663	0.401497403	0.302615298	0.020042659	2025.368079	0.010009065
0	0	0	0	0	0	0
0.091719244	6.551374598	47.03611632	0.50496176	0	2045.994891	6.419307945
0.021558369	0.031457921	0.375729536	0.280295168	0.016931339	1710.960269	0.007185977
0	0	0	0	0	0	0
0.082980675	5.927191041	44.38489965	0.454590409	0	1892.802818	5.807707065

0.005544886	0.008091084	0.157033048	0.05127858	0.008587723	867.8139547	0.001999884
0	0	0	0	0	0	0
0.076202513	5.443036661	42.32845623	0.415519355	0	1773.977814	5.333312568
0.004321366	0.006305728	0.144564698	0.047505258	0.007620148	770.0378015	0.001558595
0	0	0	0	0	0	0
0.070664352	5.047453728	40.64821962	0.383595979	0	1676.890717	4.94570404
0.003556094	0.005189045	0.133562507	0.044641798	0.00706373	713.8101718	0.001282583
0	0	0	0	0	0	0
0.065981904	4.712993125	39.2275998	0.356605149	0	1594.804746	4.6179857
0.003079492	0.004493587	0.123431621	0.042828346	0.006837842	690.9834651	0.001110686
0	0	0	0	0	0	0
0.061925782	4.423270171	37.99700294	0.333224628	0	1523.698644	4.334103161
0.002818885	0.004113311	0.114597095	0.041581206	0.006861875	693.4121157	0.001016692
0	0	0	0	0	0	0
0.05834803	4.167716415	36.91153959	0.312601548	0	1460.978616	4.083701015
0.00272115	0.003970696	0.106645615	0.041071219	0.007063272	713.7639059	0.000981442
0	0	0	0	0	0	0
0.055147621	3.939115791	35.94055953	0.294153574	0	1404.87364	3.859708664
0.002777011	0.004052208	0.099719008	0.04106334	0.007353364	743.0785017	0.00100159
0	0	0	0	0	0	0
0.052252499	3.732321372	35.06220122	0.277465351	0	1354.120515	3.657082934
0.002977788	0.004345181	0.093129872	0.0420399	0.007651528	773.2088499	0.001074004
0	0	0	0	0	0	0
0.04960946	3.543532859	34.26032291	0.262230197	0	1307.786543	3.472100136
0.00332483	0.004851583	0.086109263	0.044812525	0.007885204	796.822404	0.001199172
0	0	0	0	0	0	0
0.0471781	3.369864261	33.52266637	0.248215215	0	1265.16342	3.301932458
0.003595356	0.005246335	0.083129545	0.046268096	0.007957718	804.1501811	0.001296743
0	0	0	0	0	0	0
0.044927012	3.209072255	32.8397031	0.235239368	0	1225.700572	3.144381796
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0

PM10_RUNEX	PM2_5_RUNEX	N2O_RUNEX		Calculated CO RUNEX*VMT	VMT
0.00773885	0.007115587	0.237708388		99.46818199	1.841083588
0.011395639	0.010902669	0.430362317		10395.08963	5017.530123
0.005326157	0.00509575	0.88436009		64921.792	1439.826605
0.004869266	0.00447711	0.207523973		27.24866405	0.555221697
0.010989951	0.01051453	0.400402302		2019.504143	1669.105176
0.004776733	0.004570093	0.784265657		126362.1857	3460.268465
0.003232102	0.002971799	0.184437858		64.12142655	1.435369899
0.007867253	0.007526919	0.281414536		3588.791369	5195.778861
0.004060294	0.003884648	0.657987564		40670.59786	1581.41127
0.002263301	0.002081022	0.164151856		166.6364925	4.057550072
0.005208939	0.004983602	0.258313608		28130.61512	67102.82696
0.003581968	0.003427013	0.574710385		27029.04007	1452.837544
0.001671992	0.001537335	0.149839217		621.2534626	16.48650861
0.006261567	0.005990695	0.205749257		17401.69356	48986.60625
0.003248772	0.003108232	0.530290103		28622.40851	2099.266886
0.001303045	0.001198102	0.138783591		1299.622327	37.45939649
0.006805437	0.006511037	0.180435154		30905.73975	113320.7711
0.002993352	0.002863861	0.50200378		23693.56798	2357.983752
0.001071322	0.000985041	0.130473345		1405.329488	43.8522515
0.008206656	0.007851639	0.161568343		26826.8674	130547.2993
0.002787688	0.002667094	0.479606087		43152.61526	5827.162431
0.000929214	0.000854378	0.125057348		1255.283115	42.36431712
0.010462153	0.010009565	0.147961647		20658.5322	134054.8268
0.002620149	0.002506803	0.461219168		22893.28139	4194.534301
0.000850248	0.000781772	0.121550805		1687.847549	61.39013725
0.013574347	0.012987127	0.140158905		20622.70009	174350.4081
0.002483495	0.00237606	0.44572446		13763.02087	3421.320025
0.00082075	0.00075465	0.11999587		2535.16187	99.06092682
0.017544706	0.01678573	0.138077449		28424.31195	289865.8288
0.00237291	0.002270259	0.4324057		3531.059629	1190.846849
0.000835817	0.000768503	0.12002813		2597.318682	108.5658483
0.022369241	0.021401557	0.141966591		30468.0251	326177.2243
0	0	0		0	0
0.000897936	0.000825619	0.12259075		3173.672973	141.8653935
0.028040806	0.026827773	0.151661192		52732.16337	505304.6188
0	0	0		0	0

0.001017689	0.000935727	0.130279319	1435.279988	69.24281283
0.034557866	0.033062908	0.167106996	61474.06544	469626.4146
0	0	0	0	0
0.001105383	0.001016359	0.134810639	388.1460493	19.41677002
0.034557866	0.033062908	0.167106996	26649.6757	155590.0441
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0.004976233	0.004575463	0.005406159	46722.19694	58921.3354
0.002765082	0.002645465	0.063571166	2017.15908	721.1940045
0.003131559	0.002879353	0.004683758	18067.22694	25028.43444
0.002544511	0.002434436	0.052960782	641.3946139	306.3467034
0.002078986	0.001911551	0.00418689	54079.09881	83504.89691
0.00219684	0.002101805	0.043560093	1045.418145	1022.095487
0.001456033	0.001338769	0.003729596	158313.8742	263988.4575
0.001864455	0.0017838	0.03573342	1286.784758	3231.204648
0.00107576	0.000989122	0.003410688	872106.4888	1589429.45
0.001593241	0.001524318	0.029953241	4655.666112	19454.53175
0.000838455	0.000770929	0.003159818	1665307.84	3296943.471
0.001408209	0.00134729	0.025945003	7299.300097	40354.41234
0.000689389	0.000633868	0.002973168	1657568.702	3551225.968
0.001271564	0.001216556	0.02345376	6256.126594	43466.81655
0.000597953	0.000549796	0.002852632	1247945.817	2901166.759
0.001166326	0.001115871	0.021947471	4217.009164	35510.12649
0.000547126	0.000503062	0.002773563	1142665.068	2868062.23
0.00108292	0.001036073	0.021199571	3533.862482	35104.92881
0.000528112	0.00048558	0.002739634	1266180.533	3411212.723
0.001015594	0.00097166	0.021253536	3638.507977	41753.0619
0.000537755	0.000494446	0.002735188	1010652.341	2888246.223
0.000960802	0.000919238	0.022240152	2712.709247	35351.97982
0.00057765	0.000531128	0.00279075	1172384.244	3576816.925
0.000939935	0.000899273	0.024110996	3174.323198	43780.0485
0.000654591	0.000601873	0.002975484	746016.1515	2541830.494
0.000947354	0.000906372	0.027105639	2264.648884	31111.86976
0.000710941	0.000653684	0.003070424	156034.458	555169.1747
0.000952527	0.000911321	0.029269804	495.9815274	6795.241105
0.005635296	0.005181447	0.006428591	5610.522058	5877.562098
0.013908728	0.013307043	0.119904822	2.089580421	0.77904414
0.003550994	0.003265008	0.005548717	2161.760961	2496.653828
0.011871041	0.011357505	0.100931866	0.663599238	0.330920117
0.0023604	0.002170301	0.004947465	6456.5583	8329.838652
0.009860094	0.009433551	0.083689151	1.094820846	1.104082251
0.00165499	0.001521702	0.004397433	18852.28341	26333.56053
0.008186787	0.00783263	0.068757027	1.395557087	3.490393751
0.00122391	0.00112534	0.004016176	103698.7349	158549.8738

0.006904912	0.006606208	0.057650288	5.179758179	21.0150651
0.000954599	0.000877719	0.003717965	197798.5611	328879.002
0.006040291	0.00577899	0.049851185	8.236690347	43.59141683
0.000785223	0.000721983	0.003497645	196749.958	354244.3668
0.005422797	0.005188209	0.04499261	7.17445575	46.95348063
0.000681164	0.000626305	0.003357321	148127.8625	289399.2077
0.004971082	0.004756036	0.041992526	4.935917732	38.35854955
0.000623152	0.000572965	0.003267443	135678.3431	286096.9416
0.0046395	0.004438797	0.04048792	4.251213969	37.92084919
0.000601208	0.000552788	0.003232525	150450.5739	340277.668
0.004402508	0.004212057	0.040555179	4.545778008	45.1022582
0.000611726	0.00056246	0.003234198	120192.067	288110.3494
0.004247692	0.004063939	0.042403744	3.573586327	38.18771724
0.000656467	0.000603597	0.003310129	139666.4945	356797.1338
0.004256091	0.004071974	0.045931935	4.435816069	47.29183829
0.000743049	0.000683206	0.003546069	89236.67122	253554.4463
0.00441996	0.004228754	0.051591899	3.383555965	33.60748935
0.00080651	0.000741556	0.003668938	18700.0132	55379.62229
0.004534213	0.004338065	0.055662727	0.774371495	7.340317211
0.005160482	0.004744873	0.005986287	17657.21566	18013.82156
0.009251067	0.00885087	0.083194804	478.1030917	179.2006557
0.003249114	0.00298744	0.005173202	6816.775713	7651.859023
0.008673849	0.008298622	0.070030602	152.0263662	76.12033622
0.002158043	0.001984241	0.004616677	20388.3203	25529.67108
0.007556046	0.007229175	0.05806691	247.7213604	253.9679757
0.001512041	0.001390266	0.004106217	59607.81037	80708.30263
0.006444234	0.006165459	0.0477064	304.6664615	802.8824255
0.001117536	0.001027533	0.003751837	328158.0623	485930.9163
0.005522575	0.005283671	0.040000097	1101.624421	4834.018063
0.000871247	0.00080108	0.003474106	626316.2402	1007963.431
0.004892065	0.004680437	0.034588764	1726.561031	10027.17314
0.000716467	0.000658765	0.00326844	623213.0783	1085704.363
0.0044228	0.004231471	0.031217689	1479.214644	10800.5363
0.00062147	0.000571419	0.003136903	469226.8439	886963.949
0.004057263	0.003881747	0.02913611	996.5620296	8823.475944
0.000568605	0.000522812	0.003051972	429717.5942	876843.0127
0.003762979	0.003600194	0.028092152	834.524735	8722.793341
0.000548746	0.000504552	0.003017818	476313.8275	1042898.585
0.003520122	0.003367843	0.02813882	858.3614739	10374.70642
0.000558609	0.00051362	0.003017204	380292.5718	883013.797
0.003315887	0.003172443	0.029421429	638.9987411	8784.180016
0.00059983	0.000551522	0.003084945	441489.2699	1093528.2
0.003226439	0.003086865	0.03186943	746.4164904	10878.36747
0.000679432	0.000624713	0.003300174	281608.497	777105.2822
0.003229347	0.003089647	0.035796542	531.3777561	7730.607056

0.000737748	0.000678332	0.003411712	58960.30895	169730.0033
0.003231375	0.003091587	0.038621046	116.2042098	1688.466146
0.007674325	0.007056259	0.00768537	405.58841	1313.561899
0.02591713	0.024795966	0.160980402	3446.464865	999.0731347
0.004828667	0.004439781	0.00670246	106.8161223	380.6958311
0.021521491	0.020590481	0.135329145	668.7606525	259.9443182
0.003205154	0.002947021	0.005969936	303.095754	1188.691101
0.01760529	0.016843693	0.088381256	1588.87505	1219.582273
0.002244431	0.002063671	0.005305584	710.3749365	3026.500602
0.014486412	0.013859736	0.075331675	1310.248678	2339.545173
0.001658052	0.001524517	0.004845847	2625.754314	12197.18244
0.012150929	0.011625285	0.066812021	3597.624961	9982.015587
0.00129218	0.001188112	0.004489882	5408.022516	27290.98842
0.010582463	0.010124671	0.060672538	6429.897564	22751.84936
0.00106239	0.000976828	0.004221211	5730.291245	31304.98151
0.009476894	0.009066928	0.060672538	6016.914496	25682.68301
0.000921466	0.000847254	0.004048259	5312.469657	31402.75773
0.008685263	0.008309542	0.059011552	5686.341286	27969.01361
0.000843159	0.000775254	0.003927266	7400.298908	47089.13816
0.008124136	0.00777269	0.057561126	6740.433045	36636.53073
0.000813907	0.000748358	0.003878833	10489.87624	71729.75945
0.007748105	0.007412925	0.060345147	9649.64762	55574.04601
0.000828848	0.000762095	0.003884431	9829.009554	71938.05602
0.007537538	0.007211467	0.063058537	9941.987998	57986.66018
0.000890449	0.000818735	0.003980891	11956.90444	93784.53451
0.007626306	0.007296396	0.063679133	17830.85562	97622.72715
0.001009203	0.000927925	0.004249404	7247.469611	61632.5001
0.008013277	0.007666626	0.064508158	24895.19107	119462.066
0.001096167	0.001007885	0.004391436	2086.983269	18404.17142
0.008283081	0.007924758	0.063775111	9053.618558	39987.1597
0.00740978	0.006813019	0.008197204	50.98319394	202.4472624
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0.004662216	0.004286735	0.007151654	13.42697903	58.67316102
0.032811171	0.031391774	0.152122269	270.7472105	103.1489224
0.003094668	0.002845433	0.006380507	38.0996824	183.2020702
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0.022861418	0.021872443	0.086370077	530.3295637	928.3586776
0.001600896	0.001471965	0.005172331	330.0620484	1879.839995
0.019325914	0.018489884	0.076969252	1456.000796	3960.979637
0.001247637	0.001147156	0.004792667	679.7981746	4206.110042
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0.015220899	0.01456245	0.069413988	2434.84129	10191.18669
0.000889702	0.000818048	0.004322469	667.7870081	4839.819379

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0.013011729	0.012448847	0.064286819	2727.208941	14537.8006
0.000785851	0.000722561	0.004139859	1318.596344	11055.05073
0.012321509	0.011788486	0.06665461	3903.88892	22052.42646
0.000800276	0.000735825	0.004145059	1235.524211	11087.15357
0.011847608	0.011335086	0.068990732	4021.663207	23009.77976
0.000859754	0.000790512	0.00425248	1503.004433	14454.15117
0.011822572	0.011311132	0.069231175	7211.984555	38737.83115
0.000974415	0.000895938	0.004562966	911.0199888	9498.852646
0.012216526	0.011688044	0.069413988	10068.18241	47403.93428
0.00105838	0.000973141	0.004722583	262.3375572	2836.466346
0.012491199	0.011950835	0.068572606	3661.265872	15867.36906
0.013406254	0.012498483	0.093179723	16086.33369	378.5808762
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0.005854961	0.005458695	0.077173807	14354.66463	536.5349719
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0.003160501	0.00294669	0.067410972	199171.5619	10212.38894
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0.001854193	0.00172882	0.061843966	285052.4803	18640.55263
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0.001728675	0.001611828	0.062574655	291956.4664	18557.53571
0.001870019	0.001743627	0.064231473	396503.0883	22981.73448
0.002128265	0.001984423	0.068545778	334060.3813	16331.74824
0.002314043	0.002157647	0.070567173	80739.42066	3567.068383
0.005409081	0.00497345	0.006563576	11982.2224	11698.84206
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0.001603742	0.001534365	0.041235239	3963.269517	24625.28931
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0.000586075	0.000538874	0.003300372	257908.291	573461.8228
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0.000629193	0.00057852	0.003378822	299443.7341	710177.6633
0.001194279	0.001142615	0.04262838	2024.035972	24802.74485
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0.150967336	0.144436556	0.286308946	73.97353439	31.50088609
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0	0	0		0	0
0.00117648	0.001125586	0.310615936		10660.22808	280.5544452
0.000857166	0.000788133	0.004989638		181.6545888	1585.158764
0	0	0		0	0
0.001017503	0.000973487	0.297830048		15194.90799	411.6573885
0.000827428	0.00076079	0.004928441		260.8663613	2446.104904
0	0	0		0	0
0.000988765	0.000945991	0.286392682		22830.90152	635.2405701
0.000842617	0.000774756	0.004927495		248.9436742	2496.451572
0	0	0		0	0
0.001090264	0.0010431	0.276046325		22731.36272	648.3153347
0.000905242	0.000832336	0.00504468		313.079599	3361.75269
0	0	0		0	0
0.001322001	0.001264812	0.266600842		29910.27194	873.0294812
0.001025969	0.00094334	0.005377388		207.2263831	2406.551593
0	0	0		0	0
0.001683976	0.001611128	0.25791184		20950.62002	624.9687833
0.001114377	0.001024628	0.005552053		61.5464545	740.3679951
0	0	0		0	0
0.00217619	0.002082049	0.24986708		6314.078938	192.2696719
0	0	0		0	0
0	0	0		0	0
0	0	0		0	0

Aggregate Emission Factors by Speed.

Speed	CO RUNEX*VMT	VMT
5	208191.6304	109130.1265
10	233196.1815	50976.85629
15	263898.9005	154673.8882
20	1304657.646	544252.8808
25	1799179.759	2704144.189
30	3387661.488	5622611.263
35	3384611.642	6076790.768
40	2551999.021	5015988.232
45	2356607.351	5048755.729

50	2644433.837	6154949.196
55	2156441.466	5363913.391
60	2593272.669	6814129.918
65	1782186.913	4996245.804
70	407023.1239	1180799.31
75	0	0

CO_RUNEX
54.02697772
2.071754305
45.09000722
49.07708796
1.209932227
36.51802946
44.67240577
0.690712878
25.71791325
41.06825291
0.419216543
18.60431002
37.68253651
0.355233704
13.63447816
34.69416084
0.272727934
10.04823208
32.04691754
0.205495384
7.405425157
29.63067034
0.154105098
5.45788394
27.49379012
0.118283062
4.022722449
25.5919458
0.098060237
2.965166874
23.92390168
0.093409419
0
22.3710159
0.104357177
0

20.7282161
0.130899931
0
19.99024807
0.171281369
0
0
0
0.792958894
2.796971504
0.721868041
2.093688644
0.647615898
1.022818473
0.599699986
0.398236849
0.548691538
0.239310109
0.50510658
0.180879851
0.466759569
0.143928796
0.43015308
0.118755115
0.398410138
0.100665707
0.371181933
0.087143501
0.349919038
0.076734295
0.327773064
0.07250616
0.293495634
0.072790511
0.281057496
0.072989541
0.95456619
2.682236235
0.865863315
2.005315497
0.775112048
0.991611672
0.71590332
0.399827981
0.654044891

0.246478331
0.601432624
0.188952114
0.555407443
0.152799231
0.511846123
0.128678425
0.474239055
0.112107562
0.442140605
0.100788257
0.417173723
0.09357947
0.391445114
0.093796651
0.351942837
0.100678629
0.337669569
0.105495645
0.980203762
2.667976241
0.890865304
1.997184639
0.798612729
0.975403925
0.738558592
0.379465849
0.675318345
0.227890009
0.621368019
0.172188214
0.574017292
0.136957518
0.529025835
0.112944381
0.49007358
0.095671731
0.456721137
0.082735977
0.430675685
0.072744268
0.403729204
0.068614752
0.362381396
0.068736873

0.347377057
0.068822351
0.308769926
3.449662237
0.280581276
2.572707329
0.254982774
1.302802677
0.234718254
0.560044189
0.215275481
0.360410673
0.198161475
0.282609886
0.183047265
0.234279047
0.169172074
0.20330861
0.157155115
0.183981204
0.14624162
0.173635866
0.13663157
0.17145302
0.12749335
0.182650661
0.117591686
0.208394111
0.113397296
0.226413144
0.251834445
3.51951257
0.228843628
2.624818604
0.207965349
1.329104948
0.191437495
0.571255029
0.175579863
0.367586034
0.161621586
0.288220659
0.149294353
0.238916366
0.137977671

0.20731868
0.128176573
0.187594328
0.119275467
0.177027636
0.111437458
0.174780604
0.103984275
0.186174196
0.095908424
0.212391283
0.092487456
0.230741836
42.49114179
32.76244037
26.75438767
22.37612813
19.50293541
17.47590999
16.10035366
15.29206167
14.9293542
15.06663372
15.73250193
17.25296621
20.45466147
22.63467139
1.024222939
3.118598546
0.930657838
2.33436629
0.834179012
1.140770994
0.771316286
0.444593253
0.705206328
0.267361765
0.648822884
0.202165687
0.599354365
0.160943064
0.55237851
0.132875266
0.511718761
0.112730108

0.476914455
0.097704698
0.449739252
0.086185575
0.42164623
0.081605322
0.378574855
0.082129814
0.362947564
0.082496931
0.438129487
2.348300114
0.397988566
1.81026463
0.362268982
0.983618333
0.333041257
0.489538265
0.305584933
0.349959847
0.281350827
0.290379457
0.25988312
0.248536758
0.240288666
0.21876554
0.222959726
0.19832395
0.2075368
0.185738785
0.194009867
0.180154229
0.181416806
0.183353059
0.16809459
0.194339518
0.16211007
0.21053646
0.420429258
0.811296673
0.381910012
0.49921018
0.347633483
0.27070932
0.319586544

0.180825667
0.293239443
0.138225587
0.269984384
0.106079718
0.249383962
0.080005109
0.230581115
0.059999218
0.213952256
0.046060195
0.199152409
0.038186708
0.186171958
0.036377809
0.174087651
0.040629149
0.161303647
0.05093027
0.155560898
0.066288601
0
0.73643897
1.218051559
0.668967276
0.762647198
0.608927278
0.427128707
0.559799255
0.274677741
0.513648728
0.211416414
0.472914332
0.162193415
0.436829894
0.121613349
0.403894152
0.092061841
0.374766447
0.070366561
0.348842504
0.058235884
0.32610548
0.054865959
0.304938173

0.062097202
0.282545253
0.083936008
0.272486049
0.110344902
0
0.430458825
1.01820156
0.392744558
0.703739264
0.358641569
0.420966226
0.328449841
0.28434588
0.301457673
0.218765221
0.277440047
0.173265728
0.255643114
0.137997672
0.236332531
0.111721722
0.219202795
0.093524727
0.204429925
0.082733953
0.188818813
0.078853866
0.177080841
0.08154633
0
0
0
0.428695039
0
57.16069305
0.445465785
0
50.77279635
0.401497403
0
47.03611632
0.375729536
0
44.38489965

0.157033048

0

42.32845623

0.144564698

0

40.64821962

0.133562507

0

39.2275998

0.123431621

0

37.99700294

0.114597095

0

36.91153959

0.106645615

0

35.94055953

0.099719008

0

35.06220122

0.093129872

0

34.26032291

0.086109263

0

33.52266637

0.083129545

0

32.8397031

0

0

0

CO_RUNEX
1.907737461
4.574550069
1.706163229
2.397153405
0.665341651
0.602506794
0.556973536
0.508772928
0.466769929

0.429643487
0.402027645
0.380572825
0.356705211
0.344701357
N/A

EMFAC2017 (v1.0.2) Emission Rates
Region Type: Sub-Area
Region: Riverside (SC)
Calendar Year: 2040
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, g/mile for RUNEX, PMBW and PMTW

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	VMT
Riverside (SC)	2040	HHDT	Aggregated	5	GAS	1.974469397
Riverside (SC)	2040	HHDT	Aggregated	5	DSL	5367.867939
Riverside (SC)	2040	HHDT	Aggregated	5	NG	1634.68163
Riverside (SC)	2040	HHDT	Aggregated	10	GAS	0.595447299
Riverside (SC)	2040	HHDT	Aggregated	10	DSL	1737.368018
Riverside (SC)	2040	HHDT	Aggregated	10	NG	3928.554504
Riverside (SC)	2040	HHDT	Aggregated	15	GAS	1.539361905
Riverside (SC)	2040	HHDT	Aggregated	15	DSL	5557.098016
Riverside (SC)	2040	HHDT	Aggregated	15	NG	1795.427271
Riverside (SC)	2040	HHDT	Aggregated	20	GAS	4.351518038
Riverside (SC)	2040	HHDT	Aggregated	20	DSL	71702.33516
Riverside (SC)	2040	HHDT	Aggregated	20	NG	1649.453369
Riverside (SC)	2040	HHDT	Aggregated	25	GAS	17.68094992
Riverside (SC)	2040	HHDT	Aggregated	25	DSL	52600.63042
Riverside (SC)	2040	HHDT	Aggregated	25	NG	2383.365471
Riverside (SC)	2040	HHDT	Aggregated	30	GAS	40.17331558
Riverside (SC)	2040	HHDT	Aggregated	30	DSL	121721.5536
Riverside (SC)	2040	HHDT	Aggregated	30	NG	2677.095081
Riverside (SC)	2040	HHDT	Aggregated	35	GAS	47.02933052
Riverside (SC)	2040	HHDT	Aggregated	35	DSL	140174.7574
Riverside (SC)	2040	HHDT	Aggregated	35	NG	6615.765639
Riverside (SC)	2040	HHDT	Aggregated	40	GAS	45.43359585
Riverside (SC)	2040	HHDT	Aggregated	40	DSL	143969.928
Riverside (SC)	2040	HHDT	Aggregated	40	NG	4762.190213
Riverside (SC)	2040	HHDT	Aggregated	45	GAS	65.83782945
Riverside (SC)	2040	HHDT	Aggregated	45	DSL	187278.8316
Riverside (SC)	2040	HHDT	Aggregated	45	NG	3884.335083
Riverside (SC)	2040	HHDT	Aggregated	50	GAS	106.2378535
Riverside (SC)	2040	HHDT	Aggregated	50	DSL	311432.7743
Riverside (SC)	2040	HHDT	Aggregated	50	NG	1352.006875
Riverside (SC)	2040	HHDT	Aggregated	55	GAS	116.431403
Riverside (SC)	2040	HHDT	Aggregated	55	DSL	350467.5539
Riverside (SC)	2040	HHDT	Aggregated	55	NG	0
Riverside (SC)	2040	HHDT	Aggregated	60	GAS	152.1434875
Riverside (SC)	2040	HHDT	Aggregated	60	DSL	542934.5171
Riverside (SC)	2040	HHDT	Aggregated	60	NG	0

Riverside (SC)	2040	HHDT	Aggregated	65	GAS	74.2594284
Riverside (SC)	2040	HHDT	Aggregated	65	DSL	504599.3667
Riverside (SC)	2040	HHDT	Aggregated	65	NG	0
Riverside (SC)	2040	HHDT	Aggregated	70	GAS	20.82350766
Riverside (SC)	2040	HHDT	Aggregated	70	DSL	167176.7926
Riverside (SC)	2040	HHDT	Aggregated	70	NG	0
Riverside (SC)	2040	HHDT	Aggregated	75	DSL	0
Riverside (SC)	2040	HHDT	Aggregated	75	NG	0
Riverside (SC)	2040	LDA	Aggregated	5	GAS	61518.30522
Riverside (SC)	2040	LDA	Aggregated	5	DSL	762.5694324
Riverside (SC)	2040	LDA	Aggregated	10	GAS	26131.56776
Riverside (SC)	2040	LDA	Aggregated	10	DSL	323.9220379
Riverside (SC)	2040	LDA	Aggregated	15	GAS	87185.39219
Riverside (SC)	2040	LDA	Aggregated	15	DSL	1080.733853
Riverside (SC)	2040	LDA	Aggregated	20	GAS	275623.8024
Riverside (SC)	2040	LDA	Aggregated	20	DSL	3416.581224
Riverside (SC)	2040	LDA	Aggregated	25	GAS	1659483.876
Riverside (SC)	2040	LDA	Aggregated	25	DSL	20570.65247
Riverside (SC)	2040	LDA	Aggregated	30	GAS	3442256.924
Riverside (SC)	2040	LDA	Aggregated	30	DSL	42669.57451
Riverside (SC)	2040	LDA	Aggregated	35	GAS	3707746.973
Riverside (SC)	2040	LDA	Aggregated	35	DSL	45960.53963
Riverside (SC)	2040	LDA	Aggregated	40	GAS	3029036.273
Riverside (SC)	2040	LDA	Aggregated	40	DSL	37547.36843
Riverside (SC)	2040	LDA	Aggregated	45	GAS	2994472.655
Riverside (SC)	2040	LDA	Aggregated	45	DSL	37118.92427
Riverside (SC)	2040	LDA	Aggregated	50	GAS	3561562.616
Riverside (SC)	2040	LDA	Aggregated	50	DSL	44148.46562
Riverside (SC)	2040	LDA	Aggregated	55	GAS	3015546.262
Riverside (SC)	2040	LDA	Aggregated	55	DSL	37380.14877
Riverside (SC)	2040	LDA	Aggregated	60	GAS	3734465.857
Riverside (SC)	2040	LDA	Aggregated	60	DSL	46291.74193
Riverside (SC)	2040	LDA	Aggregated	65	GAS	2653862.19
Riverside (SC)	2040	LDA	Aggregated	65	DSL	32896.7805
Riverside (SC)	2040	LDA	Aggregated	70	GAS	579638.3688
Riverside (SC)	2040	LDA	Aggregated	70	DSL	7185.089061
Riverside (SC)	2040	LDT1	Aggregated	5	GAS	6225.303246
Riverside (SC)	2040	LDT1	Aggregated	5	DSL	0.848816489
Riverside (SC)	2040	LDT1	Aggregated	10	GAS	2644.366308
Riverside (SC)	2040	LDT1	Aggregated	10	DSL	0.360557813
Riverside (SC)	2040	LDT1	Aggregated	15	GAS	8822.666735
Riverside (SC)	2040	LDT1	Aggregated	15	DSL	1.202965494
Riverside (SC)	2040	LDT1	Aggregated	20	GAS	27891.56407
Riverside (SC)	2040	LDT1	Aggregated	20	DSL	3.802998591
Riverside (SC)	2040	LDT1	Aggregated	25	GAS	167930.3473

Riverside (SC)	2040	LDT1	Aggregated	25	DSL	22.89720549
Riverside (SC)	2040	LDT1	Aggregated	30	GAS	348336.8589
Riverside (SC)	2040	LDT1	Aggregated	30	DSL	47.49552876
Riverside (SC)	2040	LDT1	Aggregated	35	GAS	375202.9447
Riverside (SC)	2040	LDT1	Aggregated	35	DSL	51.15870398
Riverside (SC)	2040	LDT1	Aggregated	40	GAS	306521.2749
Riverside (SC)	2040	LDT1	Aggregated	40	DSL	41.79399812
Riverside (SC)	2040	LDT1	Aggregated	45	GAS	303023.6329
Riverside (SC)	2040	LDT1	Aggregated	45	DSL	41.31709667
Riverside (SC)	2040	LDT1	Aggregated	50	GAS	360409.9176
Riverside (SC)	2040	LDT1	Aggregated	50	DSL	49.14168332
Riverside (SC)	2040	LDT1	Aggregated	55	GAS	305156.1623
Riverside (SC)	2040	LDT1	Aggregated	55	DSL	41.60786582
Riverside (SC)	2040	LDT1	Aggregated	60	GAS	377906.744
Riverside (SC)	2040	LDT1	Aggregated	60	DSL	51.52736546
Riverside (SC)	2040	LDT1	Aggregated	65	GAS	268555.7875
Riverside (SC)	2040	LDT1	Aggregated	65	DSL	36.61742593
Riverside (SC)	2040	LDT1	Aggregated	70	GAS	58656.11229
Riverside (SC)	2040	LDT1	Aggregated	70	DSL	7.997726905
Riverside (SC)	2040	LDT2	Aggregated	5	GAS	18892.16879
Riverside (SC)	2040	LDT2	Aggregated	5	DSL	192.6740505
Riverside (SC)	2040	LDT2	Aggregated	10	GAS	8024.960819
Riverside (SC)	2040	LDT2	Aggregated	10	DSL	81.84352589
Riverside (SC)	2040	LDT2	Aggregated	15	GAS	26774.48834
Riverside (SC)	2040	LDT2	Aggregated	15	DSL	273.0628322
Riverside (SC)	2040	LDT2	Aggregated	20	GAS	84643.60941
Riverside (SC)	2040	LDT2	Aggregated	20	DSL	863.2480075
Riverside (SC)	2040	LDT2	Aggregated	25	GAS	509624.7268
Riverside (SC)	2040	LDT2	Aggregated	25	DSL	5197.46893
Riverside (SC)	2040	LDT2	Aggregated	30	GAS	1057111.353
Riverside (SC)	2040	LDT2	Aggregated	30	DSL	10781.07698
Riverside (SC)	2040	LDT2	Aggregated	35	GAS	1138642.903
Riverside (SC)	2040	LDT2	Aggregated	35	DSL	11612.58628
Riverside (SC)	2040	LDT2	Aggregated	40	GAS	930211.9808
Riverside (SC)	2040	LDT2	Aggregated	40	DSL	9486.878509
Riverside (SC)	2040	LDT2	Aggregated	45	GAS	919597.5513
Riverside (SC)	2040	LDT2	Aggregated	45	DSL	9378.625977
Riverside (SC)	2040	LDT2	Aggregated	50	GAS	1093749.931
Riverside (SC)	2040	LDT2	Aggregated	50	DSL	11154.73992
Riverside (SC)	2040	LDT2	Aggregated	55	GAS	926069.2209
Riverside (SC)	2040	LDT2	Aggregated	55	DSL	9444.628075
Riverside (SC)	2040	LDT2	Aggregated	60	GAS	1146848.228
Riverside (SC)	2040	LDT2	Aggregated	60	DSL	11696.26927
Riverside (SC)	2040	LDT2	Aggregated	65	GAS	814996.6463
Riverside (SC)	2040	LDT2	Aggregated	65	DSL	8311.841094

Riverside (SC)	2040	LDT2	Aggregated	70	GAS	178005.975
Riverside (SC)	2040	LDT2	Aggregated	70	DSL	1815.415296
Riverside (SC)	2040	LHDT1	Aggregated	5	GAS	1364.275254
Riverside (SC)	2040	LHDT1	Aggregated	5	DSL	1020.382923
Riverside (SC)	2040	LHDT1	Aggregated	10	GAS	395.3935495
Riverside (SC)	2040	LHDT1	Aggregated	10	DSL	265.4888156
Riverside (SC)	2040	LHDT1	Aggregated	15	GAS	1234.583505
Riverside (SC)	2040	LHDT1	Aggregated	15	DSL	1245.595424
Riverside (SC)	2040	LHDT1	Aggregated	20	GAS	3143.346256
Riverside (SC)	2040	LHDT1	Aggregated	20	DSL	2389.446638
Riverside (SC)	2040	LHDT1	Aggregated	25	GAS	12668.08529
Riverside (SC)	2040	LHDT1	Aggregated	25	DSL	10194.92757
Riverside (SC)	2040	LHDT1	Aggregated	30	GAS	28344.62555
Riverside (SC)	2040	LHDT1	Aggregated	30	DSL	23237.13626
Riverside (SC)	2040	LHDT1	Aggregated	35	GAS	32513.58892
Riverside (SC)	2040	LHDT1	Aggregated	35	DSL	26230.48329
Riverside (SC)	2040	LHDT1	Aggregated	40	GAS	32615.14004
Riverside (SC)	2040	LHDT1	Aggregated	40	DSL	28565.58031
Riverside (SC)	2040	LHDT1	Aggregated	45	GAS	48907.13257
Riverside (SC)	2040	LHDT1	Aggregated	45	DSL	37417.97174
Riverside (SC)	2040	LHDT1	Aggregated	50	GAS	74499.0669
Riverside (SC)	2040	LHDT1	Aggregated	50	DSL	56759.41586
Riverside (SC)	2040	LHDT1	Aggregated	55	GAS	74715.40529
Riverside (SC)	2040	LHDT1	Aggregated	55	DSL	59223.49003
Riverside (SC)	2040	LHDT1	Aggregated	60	GAS	97405.32193
Riverside (SC)	2040	LHDT1	Aggregated	60	DSL	99704.97679
Riverside (SC)	2040	LHDT1	Aggregated	65	GAS	64011.97751
Riverside (SC)	2040	LHDT1	Aggregated	65	DSL	122010.1391
Riverside (SC)	2040	LHDT1	Aggregated	70	GAS	19114.71066
Riverside (SC)	2040	LHDT1	Aggregated	70	DSL	40840.06815
Riverside (SC)	2040	LHDT2	Aggregated	5	GAS	209.6730029
Riverside (SC)	2040	LHDT2	Aggregated	5	DSL	405.9408115
Riverside (SC)	2040	LHDT2	Aggregated	10	GAS	60.7673214
Riverside (SC)	2040	LHDT2	Aggregated	10	DSL	105.6199029
Riverside (SC)	2040	LHDT2	Aggregated	15	GAS	189.7409119
Riverside (SC)	2040	LHDT2	Aggregated	15	DSL	495.5375141
Riverside (SC)	2040	LHDT2	Aggregated	20	GAS	483.0952161
Riverside (SC)	2040	LHDT2	Aggregated	20	DSL	950.5979421
Riverside (SC)	2040	LHDT2	Aggregated	25	GAS	1946.935178
Riverside (SC)	2040	LHDT2	Aggregated	25	DSL	4055.866749
Riverside (SC)	2040	LHDT2	Aggregated	30	GAS	4356.234372
Riverside (SC)	2040	LHDT2	Aggregated	30	DSL	9244.472573
Riverside (SC)	2040	LHDT2	Aggregated	35	GAS	4996.954832
Riverside (SC)	2040	LHDT2	Aggregated	35	DSL	10435.32132
Riverside (SC)	2040	LHDT2	Aggregated	40	GAS	5012.56204

Riverside (SC)	2040	LHDT2	Aggregated	40	DSL	11364.29725
Riverside (SC)	2040	LHDT2	Aggregated	45	GAS	7516.448985
Riverside (SC)	2040	LHDT2	Aggregated	45	DSL	14886.06038
Riverside (SC)	2040	LHDT2	Aggregated	50	GAS	11449.62721
Riverside (SC)	2040	LHDT2	Aggregated	50	DSL	22580.7026
Riverside (SC)	2040	LHDT2	Aggregated	55	GAS	11482.87587
Riverside (SC)	2040	LHDT2	Aggregated	55	DSL	23560.98975
Riverside (SC)	2040	LHDT2	Aggregated	60	GAS	14970.04822
Riverside (SC)	2040	LHDT2	Aggregated	60	DSL	39665.81394
Riverside (SC)	2040	LHDT2	Aggregated	65	GAS	9837.885357
Riverside (SC)	2040	LHDT2	Aggregated	65	DSL	48539.51761
Riverside (SC)	2040	LHDT2	Aggregated	70	GAS	2937.705402
Riverside (SC)	2040	LHDT2	Aggregated	70	DSL	16247.47928
Riverside (SC)	2040	MCY	Aggregated	5	GAS	390.3058575
Riverside (SC)	2040	MCY	Aggregated	10	GAS	165.7929933
Riverside (SC)	2040	MCY	Aggregated	15	GAS	553.15193
Riverside (SC)	2040	MCY	Aggregated	20	GAS	1748.708521
Riverside (SC)	2040	MCY	Aggregated	25	GAS	10528.67557
Riverside (SC)	2040	MCY	Aggregated	30	GAS	21839.56524
Riverside (SC)	2040	MCY	Aggregated	35	GAS	23523.97968
Riverside (SC)	2040	MCY	Aggregated	40	GAS	19217.86687
Riverside (SC)	2040	MCY	Aggregated	45	GAS	18998.57633
Riverside (SC)	2040	MCY	Aggregated	50	GAS	22596.50597
Riverside (SC)	2040	MCY	Aggregated	55	GAS	19132.27885
Riverside (SC)	2040	MCY	Aggregated	60	GAS	23693.49893
Riverside (SC)	2040	MCY	Aggregated	65	GAS	16837.55679
Riverside (SC)	2040	MCY	Aggregated	70	GAS	3677.543615
Riverside (SC)	2040	MDV	Aggregated	5	GAS	12112.69567
Riverside (SC)	2040	MDV	Aggregated	5	DSL	433.1002186
Riverside (SC)	2040	MDV	Aggregated	10	GAS	5145.195834
Riverside (SC)	2040	MDV	Aggregated	10	DSL	183.9710582
Riverside (SC)	2040	MDV	Aggregated	15	GAS	17166.43719
Riverside (SC)	2040	MDV	Aggregated	15	DSL	613.8012463
Riverside (SC)	2040	MDV	Aggregated	20	GAS	54269.16795
Riverside (SC)	2040	MDV	Aggregated	20	DSL	1940.44242
Riverside (SC)	2040	MDV	Aggregated	25	GAS	326745.3986
Riverside (SC)	2040	MDV	Aggregated	25	DSL	11683.07265
Riverside (SC)	2040	MDV	Aggregated	30	GAS	677765.9169
Riverside (SC)	2040	MDV	Aggregated	30	DSL	24234.12382
Riverside (SC)	2040	MDV	Aggregated	35	GAS	730039.7915
Riverside (SC)	2040	MDV	Aggregated	35	DSL	26103.22275
Riverside (SC)	2040	MDV	Aggregated	40	GAS	596404.508
Riverside (SC)	2040	MDV	Aggregated	40	DSL	21324.9742
Riverside (SC)	2040	MDV	Aggregated	45	GAS	589599.0768
Riverside (SC)	2040	MDV	Aggregated	45	DSL	21081.63995

Riverside (SC)	2040	MDV	Aggregated	50	GAS	701256.7062
Riverside (SC)	2040	MDV	Aggregated	50	DSL	25074.05791
Riverside (SC)	2040	MDV	Aggregated	55	GAS	593748.3814
Riverside (SC)	2040	MDV	Aggregated	55	DSL	21230.00204
Riverside (SC)	2040	MDV	Aggregated	60	GAS	735300.6274
Riverside (SC)	2040	MDV	Aggregated	60	DSL	26291.32862
Riverside (SC)	2040	MDV	Aggregated	65	GAS	522534.3081
Riverside (SC)	2040	MDV	Aggregated	65	DSL	18683.67944
Riverside (SC)	2040	MDV	Aggregated	70	GAS	114128.358
Riverside (SC)	2040	MDV	Aggregated	70	DSL	4080.761056
Riverside (SC)	2040	MH	Aggregated	5	GAS	70.28341588
Riverside (SC)	2040	MH	Aggregated	5	DSL	30.09583822
Riverside (SC)	2040	MH	Aggregated	10	GAS	21.19560333
Riverside (SC)	2040	MH	Aggregated	10	DSL	8.606046208
Riverside (SC)	2040	MH	Aggregated	15	GAS	54.7952848
Riverside (SC)	2040	MH	Aggregated	15	DSL	23.77783299
Riverside (SC)	2040	MH	Aggregated	20	GAS	154.897084
Riverside (SC)	2040	MH	Aggregated	20	DSL	63.73073856
Riverside (SC)	2040	MH	Aggregated	25	GAS	629.3729131
Riverside (SC)	2040	MH	Aggregated	25	DSL	265.3051507
Riverside (SC)	2040	MH	Aggregated	30	GAS	1430.013476
Riverside (SC)	2040	MH	Aggregated	30	DSL	614.0249883
Riverside (SC)	2040	MH	Aggregated	35	GAS	1674.06089
Riverside (SC)	2040	MH	Aggregated	35	DSL	726.8633123
Riverside (SC)	2040	MH	Aggregated	40	GAS	1617.258954
Riverside (SC)	2040	MH	Aggregated	40	DSL	707.785488
Riverside (SC)	2040	MH	Aggregated	45	GAS	2343.570154
Riverside (SC)	2040	MH	Aggregated	45	DSL	937.6314125
Riverside (SC)	2040	MH	Aggregated	50	GAS	3781.653566
Riverside (SC)	2040	MH	Aggregated	50	DSL	1567.75235
Riverside (SC)	2040	MH	Aggregated	55	GAS	4144.504203
Riverside (SC)	2040	MH	Aggregated	55	DSL	1870.109612
Riverside (SC)	2040	MH	Aggregated	60	GAS	5415.715242
Riverside (SC)	2040	MH	Aggregated	60	DSL	2712.535338
Riverside (SC)	2040	MH	Aggregated	65	GAS	2643.346257
Riverside (SC)	2040	MH	Aggregated	65	DSL	1718.586832
Riverside (SC)	2040	MH	Aggregated	70	GAS	741.2357218
Riverside (SC)	2040	MH	Aggregated	70	DSL	519.5239175
Riverside (SC)	2040	MHDT	Aggregated	5	GAS	212.8605354
Riverside (SC)	2040	MHDT	Aggregated	5	DSL	2167.367885
Riverside (SC)	2040	MHDT	Aggregated	10	GAS	64.19305915
Riverside (SC)	2040	MHDT	Aggregated	10	DSL	619.7690203
Riverside (SC)	2040	MHDT	Aggregated	15	GAS	165.9531415
Riverside (SC)	2040	MHDT	Aggregated	15	DSL	1712.37336
Riverside (SC)	2040	MHDT	Aggregated	20	GAS	469.1217098

Riverside (SC)	2040	MHDT	Aggregated	20	DSL	4589.603222
Riverside (SC)	2040	MHDT	Aggregated	25	GAS	1906.120435
Riverside (SC)	2040	MHDT	Aggregated	25	DSL	19106.09232
Riverside (SC)	2040	MHDT	Aggregated	30	GAS	4330.942519
Riverside (SC)	2040	MHDT	Aggregated	30	DSL	44219.33792
Riverside (SC)	2040	MHDT	Aggregated	35	GAS	5070.065148
Riverside (SC)	2040	MHDT	Aggregated	35	DSL	52345.45017
Riverside (SC)	2040	MHDT	Aggregated	40	GAS	4898.034659
Riverside (SC)	2040	MHDT	Aggregated	40	DSL	50971.55045
Riverside (SC)	2040	MHDT	Aggregated	45	GAS	7097.742639
Riverside (SC)	2040	MHDT	Aggregated	45	DSL	67524.02763
Riverside (SC)	2040	MHDT	Aggregated	50	GAS	11453.12579
Riverside (SC)	2040	MHDT	Aggregated	50	DSL	112902.5239
Riverside (SC)	2040	MHDT	Aggregated	55	GAS	12552.05617
Riverside (SC)	2040	MHDT	Aggregated	55	DSL	134676.9438
Riverside (SC)	2040	MHDT	Aggregated	60	GAS	16402.04921
Riverside (SC)	2040	MHDT	Aggregated	60	DSL	195344.683
Riverside (SC)	2040	MHDT	Aggregated	65	GAS	8005.645322
Riverside (SC)	2040	MHDT	Aggregated	65	DSL	123764.9498
Riverside (SC)	2040	MHDT	Aggregated	70	GAS	2244.908428
Riverside (SC)	2040	MHDT	Aggregated	70	DSL	37413.79277
Riverside (SC)	2040	MHDT	Aggregated	75	DSL	0
Riverside (SC)	2040	OBUS	Aggregated	5	GAS	42.492413
Riverside (SC)	2040	OBUS	Aggregated	5	DSL	47.62847593
Riverside (SC)	2040	OBUS	Aggregated	10	GAS	12.81457822
Riverside (SC)	2040	OBUS	Aggregated	10	DSL	14.04978209
Riverside (SC)	2040	OBUS	Aggregated	15	GAS	33.12849615
Riverside (SC)	2040	OBUS	Aggregated	15	DSL	41.24682552
Riverside (SC)	2040	OBUS	Aggregated	20	GAS	93.64870478
Riverside (SC)	2040	OBUS	Aggregated	20	DSL	103.198386
Riverside (SC)	2040	OBUS	Aggregated	25	GAS	380.5104437
Riverside (SC)	2040	OBUS	Aggregated	25	DSL	434.8982984
Riverside (SC)	2040	OBUS	Aggregated	30	GAS	864.5670173
Riverside (SC)	2040	OBUS	Aggregated	30	DSL	1006.589466
Riverside (SC)	2040	OBUS	Aggregated	35	GAS	1012.114819
Riverside (SC)	2040	OBUS	Aggregated	35	DSL	1180.62409
Riverside (SC)	2040	OBUS	Aggregated	40	GAS	977.7731284
Riverside (SC)	2040	OBUS	Aggregated	40	DSL	1170.346909
Riverside (SC)	2040	OBUS	Aggregated	45	GAS	1416.891163
Riverside (SC)	2040	OBUS	Aggregated	45	DSL	1540.981543
Riverside (SC)	2040	OBUS	Aggregated	50	GAS	2286.337156
Riverside (SC)	2040	OBUS	Aggregated	50	DSL	2572.059177
Riverside (SC)	2040	OBUS	Aggregated	55	GAS	2505.711797
Riverside (SC)	2040	OBUS	Aggregated	55	DSL	3010.076802
Riverside (SC)	2040	OBUS	Aggregated	60	GAS	3274.268985

Riverside (SC)	2040	OBUS	Aggregated	60	DSL	4461.5835
Riverside (SC)	2040	OBUS	Aggregated	65	GAS	1598.131785
Riverside (SC)	2040	OBUS	Aggregated	65	DSL	3270.424416
Riverside (SC)	2040	OBUS	Aggregated	70	GAS	448.1412013
Riverside (SC)	2040	OBUS	Aggregated	70	DSL	1029.077128
Riverside (SC)	2040	OBUS	Aggregated	75	DSL	0
Riverside (SC)	2040	SBUS	Aggregated	5	GAS	134.6970075
Riverside (SC)	2040	SBUS	Aggregated	5	DSL	366.8479517
Riverside (SC)	2040	SBUS	Aggregated	10	GAS	472.1061075
Riverside (SC)	2040	SBUS	Aggregated	10	DSL	1285.783268
Riverside (SC)	2040	SBUS	Aggregated	15	GAS	944.2122151
Riverside (SC)	2040	SBUS	Aggregated	15	DSL	2571.566536
Riverside (SC)	2040	SBUS	Aggregated	20	GAS	1281.614514
Riverside (SC)	2040	SBUS	Aggregated	20	DSL	3490.483328
Riverside (SC)	2040	SBUS	Aggregated	25	GAS	2023.114636
Riverside (SC)	2040	SBUS	Aggregated	25	DSL	5509.962499
Riverside (SC)	2040	SBUS	Aggregated	30	GAS	2427.205659
Riverside (SC)	2040	SBUS	Aggregated	30	DSL	6610.506354
Riverside (SC)	2040	SBUS	Aggregated	35	GAS	2491.221257
Riverside (SC)	2040	SBUS	Aggregated	35	DSL	6784.853145
Riverside (SC)	2040	SBUS	Aggregated	40	GAS	1681.706049
Riverside (SC)	2040	SBUS	Aggregated	40	DSL	4580.134561
Riverside (SC)	2040	SBUS	Aggregated	45	GAS	806.8420813
Riverside (SC)	2040	SBUS	Aggregated	45	DSL	2197.438312
Riverside (SC)	2040	SBUS	Aggregated	50	GAS	404.0910226
Riverside (SC)	2040	SBUS	Aggregated	50	DSL	1100.543855
Riverside (SC)	2040	SBUS	Aggregated	55	GAS	601.4636642
Riverside (SC)	2040	SBUS	Aggregated	55	DSL	1638.089199
Riverside (SC)	2040	SBUS	Aggregated	60	GAS	334.7427753
Riverside (SC)	2040	SBUS	Aggregated	60	DSL	911.673568
Riverside (SC)	2040	SBUS	Aggregated	65	DSL	0
Riverside (SC)	2040	SBUS	Aggregated	70	DSL	0
Riverside (SC)	2040	SBUS	Aggregated	75	DSL	0
Riverside (SC)	2040	UBUS	Aggregated	5	GAS	180.1509066
Riverside (SC)	2040	UBUS	Aggregated	5	DSL	0
Riverside (SC)	2040	UBUS	Aggregated	5	NG	416.7428184
Riverside (SC)	2040	UBUS	Aggregated	10	GAS	442.5901389
Riverside (SC)	2040	UBUS	Aggregated	10	DSL	0
Riverside (SC)	2040	UBUS	Aggregated	10	NG	1294.181291
Riverside (SC)	2040	UBUS	Aggregated	15	GAS	791.2277149
Riverside (SC)	2040	UBUS	Aggregated	15	DSL	0
Riverside (SC)	2040	UBUS	Aggregated	15	NG	2263.372253
Riverside (SC)	2040	UBUS	Aggregated	20	GAS	7207.850737
Riverside (SC)	2040	UBUS	Aggregated	20	DSL	0
Riverside (SC)	2040	UBUS	Aggregated	20	NG	21387.15579

Riverside (SC)	2040	UBUS	Aggregated	25	GAS	426.8249304
Riverside (SC)	2040	UBUS	Aggregated	25	DSL	0
Riverside (SC)	2040	UBUS	Aggregated	25	NG	110.8441881
Riverside (SC)	2040	UBUS	Aggregated	30	GAS	960.0409234
Riverside (SC)	2040	UBUS	Aggregated	30	DSL	0
Riverside (SC)	2040	UBUS	Aggregated	30	NG	249.3175753
Riverside (SC)	2040	UBUS	Aggregated	35	GAS	1101.352688
Riverside (SC)	2040	UBUS	Aggregated	35	DSL	0
Riverside (SC)	2040	UBUS	Aggregated	35	NG	286.0154969
Riverside (SC)	2040	UBUS	Aggregated	40	GAS	1109.924453
Riverside (SC)	2040	UBUS	Aggregated	40	DSL	0
Riverside (SC)	2040	UBUS	Aggregated	40	NG	288.2415392
Riverside (SC)	2040	UBUS	Aggregated	45	GAS	1628.591561
Riverside (SC)	2040	UBUS	Aggregated	45	DSL	0
Riverside (SC)	2040	UBUS	Aggregated	45	NG	422.9366574
Riverside (SC)	2040	UBUS	Aggregated	50	GAS	2513.127326
Riverside (SC)	2040	UBUS	Aggregated	50	DSL	0
Riverside (SC)	2040	UBUS	Aggregated	50	NG	652.6459402
Riverside (SC)	2040	UBUS	Aggregated	55	GAS	2564.853474
Riverside (SC)	2040	UBUS	Aggregated	55	DSL	0
Riverside (SC)	2040	UBUS	Aggregated	55	NG	666.0789488
Riverside (SC)	2040	UBUS	Aggregated	60	GAS	3453.863542
Riverside (SC)	2040	UBUS	Aggregated	60	DSL	0
Riverside (SC)	2040	UBUS	Aggregated	60	NG	896.9501846
Riverside (SC)	2040	UBUS	Aggregated	65	GAS	2472.490267
Riverside (SC)	2040	UBUS	Aggregated	65	DSL	0
Riverside (SC)	2040	UBUS	Aggregated	65	NG	642.0927101
Riverside (SC)	2040	UBUS	Aggregated	70	GAS	760.65382
Riverside (SC)	2040	UBUS	Aggregated	70	DSL	0
Riverside (SC)	2040	UBUS	Aggregated	70	NG	197.5377938
Riverside (SC)	2040	UBUS	Aggregated	75	GAS	0
Riverside (SC)	2040	UBUS	Aggregated	75	DSL	0
Riverside (SC)	2040	UBUS	Aggregated	75	NG	0

Additional Documentation Attachment to Comment Letter 1-F5

ROG_RUNEX	TOG_RUNEX	CO_RUNEX	NOx_RUNEX	SOx_RUNEX	CO2_RUNEX	CH4_RUNEX
2.121484225	3.095664801	54.75392453	5.466883561	0.036228959	3661.040018	0.489881516
0.122186231	0.139099723	2.0691015	13.41559096	0.024233993	2565.121217	0.005675234
0.216965274	12.75977542	45.18180013	1.409656507	0	4192.488348	12.45907205
1.331353283	1.942707585	49.73743275	4.77269399	0.029476244	2978.658852	0.307428807
0.075144083	0.085545818	1.240235048	10.65791504	0.021403499	2265.518879	0.003490248
0.174188627	10.32367119	36.59239168	1.144621789	0	3717.778209	10.08191385
0.880810068	1.285275983	45.27348443	4.241753112	0.024168495	2442.295641	0.203391836
0.042722747	0.048636595	0.689550377	7.110819259	0.015809365	1673.390662	0.001984361
0.11874518	7.243999356	25.770556	0.805032866	0	3119.161651	7.078310221
0.61934273	0.903743457	41.62083677	3.775209991	0.020147106	2035.922722	0.14301523
0.026223846	0.029853852	0.419627446	4.803994441	0.014683984	1554.271208	0.00121803
0.083295807	5.222745907	18.64257644	0.583555822	0	2724.545741	5.105916258
0.457251174	0.667219839	38.18956468	3.446043936	0.017258376	1744.00832	0.105585936
0.022805142	0.025961918	0.353267533	4.335940952	0.011662848	1234.489846	0.00105924
0.061151927	3.828200296	13.66238111	0.43677804	0	2514.176296	3.742455445
0.356393533	0.520048607	35.16097966	3.191783581	0.015331656	1549.307713	0.082296442
0.018442977	0.020995925	0.271111665	3.228951285	0.010238624	1083.738474	0.000856629
0.045452477	2.823744738	10.06859475	0.348954765	0	2380.238165	2.760105596
0.293215587	0.427859497	32.47811702	3.000662234	0.014208803	1435.840272	0.067707737
0.015178185	0.017279209	0.204320457	2.348886577	0.009161654	969.7433337	0.000704987
0.033836539	2.083216705	7.420233726	0.291262218	0	2274.18269	2.035922071
0.254045578	0.370702712	30.0293586	2.876103646	0.013731242	1387.581355	0.058662813
0.013026126	0.014829253	0.153167926	1.686831303	0.008395968	888.6969011	0.00060503
0.025256051	1.537362317	5.468595189	0.250893339	0	2187.108962	1.50213612
0.232406834	0.339127507	27.8637261	2.795459175	0.013743222	1388.791976	0.053666113
0.011977646	0.013635639	0.117521008	1.243465754	0.007960455	842.5987645	0.000556331
0.018938667	1.135146446	4.030403031	0.221462826	0	2113.714682	1.108807048
0.224402253	0.327447241	25.93629199	2.759698366	0.014103254	1425.174229	0.051817739
0.012033082	0.013698747	0.097394123	1.020833757	0.007850269	830.9357291	0.000558905
0.014315223	0.838959873	2.970595943	0.199457091	0	2050.604353	0.819132157
0.228951641	0.334085697	24.24580391	2.760440278	0.014639405	1479.353835	0.052868259
0.013189669	0.015015434	0.092773724	1.020353003	0.008071697	854.3735038	0.000612626
0	0	0	0	0	0	0
0.245819978	0.358699935	22.67202365	2.819376118	0.015193537	1535.35043	0.056763403
0.015447566	0.017585877	0.103673214	1.243706179	0.008621566	912.5760267	0.000717499
0	0	0	0	0	0	0

0.275060097	0.401367048	21.00711956	2.996199966	0.015621773	1578.624928	0.063515371
0.018803454	0.021406301	0.130090103	1.695607476	0.009500539	1005.613601	0.000873372
0	0	0	0	0	0	0
0.29712397	0.433562599	20.25922197	3.100412538	0.015751602	1591.744484	0.068610239
0.023177476	0.026385792	0.171277611	1.697133875	0.009500539	1005.613601	0.001076534
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0.013682157	0.019964971	0.753786842	0.031315983	0.004714606	476.4244183	0.004827755
0.084326274	0.095999857	2.707818372	0.045501651	0.003716789	393.1614037	0.003916794
0.008614486	0.012570238	0.686415968	0.027136965	0.003829428	386.974704	0.003039271
0.063118414	0.071856119	2.027008867	0.03789965	0.003096436	327.5405603	0.00293173
0.005645426	0.008237793	0.61593155	0.024262642	0.003107417	314.0133452	0.001991493
0.030843977	0.035113818	0.989972939	0.025589906	0.00254681	269.4011787	0.001432644
0.003987408	0.005818417	0.570478929	0.021614724	0.00259708	262.4424001	0.001406485
0.012019205	0.013683066	0.385137347	0.017021216	0.002089211	220.9964402	0.000558269
0.002938659	0.004288084	0.522021823	0.019768106	0.002216699	224.0037555	0.001036466
0.007225776	0.008226066	0.231297704	0.013080718	0.001751264	185.248422	0.000335624
0.002290579	0.003342407	0.480599287	0.018314845	0.001967206	198.7917649	0.000807837
0.005461665	0.006217743	0.174763692	0.011003746	0.001516916	160.4591254	0.000253684
0.001884864	0.002750389	0.444136843	0.017233142	0.001824399	184.3607367	0.000664726
0.004345707	0.004947298	0.139006689	0.009621347	0.001371261	145.0518172	0.00020185
0.001629702	0.002378057	0.40930614	0.016534261	0.001762208	178.0761176	0.000574729
0.003585199	0.00408151	0.114634958	0.008643169	0.001283194	135.7360429	0.000166526
0.001489082	0.002172864	0.379091141	0.016075158	0.001766572	178.5171128	0.000525145
0.003038451	0.003459075	0.097104573	0.007912733	0.001239467	131.1105901	0.00014113
0.001438186	0.002098597	0.353162169	0.015877106	0.001818632	183.7779423	0.000507219
0.002629374	0.002993368	0.083976082	0.007350305	0.001242622	131.4443426	0.000122129
0.001475049	0.002152388	0.332904934	0.015849107	0.001901203	192.1220374	0.000520261
0.002313877	0.002634195	0.073835897	0.006901438	0.001300306	137.5461541	0.000107475
0.001585417	0.002313436	0.311790641	0.016168263	0.001978348	199.9176806	0.000559238
0.002184009	0.002486349	0.069645848	0.006727925	0.001409688	149.1165481	0.000101443
0.001736766	0.002534285	0.27909927	0.017235786	0.001995785	201.6797929	0.000612651
0.002188898	0.002491915	0.069771546	0.006778863	0.001584774	167.6371793	0.00010167
0.001869239	0.002727589	0.267231187	0.017783563	0.002002785	202.3872012	0.000659408
0.002192307	0.002495795	0.069859528	0.006799425	0.001711306	181.0216451	0.000101828
0.018144246	0.026476041	0.802163055	0.036647864	0.00548829	554.6073736	0.005927502
0.26674604	0.303672632	2.771411213	0.160033443	0.006985515	738.9267638	0.012389844
0.011482522	0.016755269	0.729758181	0.031677256	0.004457507	450.4438285	0.003744421
0.199548525	0.227172729	2.073828024	0.134845993	0.005880173	622.0038151	0.009268648
0.00756364	0.011036846	0.654653624	0.028274915	0.0036214	365.9528563	0.002462193
0.097868591	0.111416885	1.016614825	0.093855633	0.004875632	515.7436744	0.004545809
0.005364608	0.007828023	0.605800498	0.025151313	0.003024186	305.6026732	0.001743718
0.038539628	0.043874805	0.399839476	0.065432647	0.004005704	423.722803	0.001790092
0.003968219	0.005790416	0.554162049	0.022982679	0.002581832	260.90147	0.00128819

0.023331282	0.026561113	0.242089574	0.052583944	0.003358639	355.276296	0.001083693
0.003101486	0.004525681	0.510040974	0.021282345	0.002291207	231.5329896	0.001005872
0.017686974	0.020135444	0.183756778	0.046003219	0.002904272	307.2134531	0.000821526
0.002556313	0.003730166	0.471253727	0.020022638	0.002124726	214.7096045	0.000828587
0.014115759	0.016069853	0.146933575	0.041762699	0.002621217	277.2719485	0.00065565
0.002211499	0.003227014	0.434330904	0.019216516	0.002052958	207.4572346	0.000716692
0.011688148	0.013306179	0.121995857	0.038889831	0.002446436	258.7836014	0.000542892
0.002019343	0.002946621	0.402318504	0.018695198	0.002058336	208.0007033	0.000654573
0.009953439	0.011331328	0.104298807	0.036850348	0.002358779	249.5112942	0.000462318
0.001946722	0.002840653	0.374864613	0.018484196	0.002118921	214.1230597	0.000631438
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0.001990582	0.002904653	0.353380598	0.018477664	0.002213693	223.7000637	0.000646325
0.007700045	0.00876599	0.081878974	0.034285996	0.002470393	261.3177723	0.000357652
0.002131468	0.003110234	0.331115005	0.018888976	0.002303478	232.7730246	0.000692982
0.007334734	0.008350107	0.078938572	0.034126301	0.002675941	283.0606413	0.000340684
0.00232627	0.003394487	0.296975237	0.020202946	0.002331357	235.5902839	0.000757429
0.007420854	0.008448149	0.081152879	0.034757497	0.003005684	317.9408013	0.000344685
0.00249816	0.00364531	0.28455874	0.02088289	0.002341577	236.623042	0.000814067
0.007480899	0.008516507	0.082702775	0.035048283	0.003242846	343.0277288	0.000347473
0.021426717	0.031265815	0.896214022	0.035428293	0.005418966	547.6020437	0.007004435
0.264814036	0.301473174	2.722096459	0.152072203	0.004861363	514.2342561	0.012300106
0.013534032	0.019748827	0.815572526	0.030616765	0.004401243	444.7581857	0.004418788
0.1982344	0.225676685	2.037721616	0.126351601	0.004092133	432.8651834	0.009207609
0.008898563	0.012984762	0.731782667	0.027323567	0.003577915	361.5585791	0.002901821
0.096805629	0.110206773	0.995087044	0.084744324	0.003393052	358.916577	0.004496436
0.006301476	0.009195099	0.677318843	0.024302579	0.002986862	301.8309894	0.002052775
0.0376491	0.042860997	0.386991487	0.055759638	0.002787652	294.8773695	0.001748729
0.004654956	0.006792501	0.619664127	0.022205356	0.002550347	257.7198367	0.001515057
0.022604405	0.025733612	0.232349946	0.0423854	0.002337345	247.2440446	0.001049931
0.0036346	0.0053036	0.570381341	0.020561666	0.002263299	228.712877	0.001182179
0.01707622	0.019440141	0.175532545	0.035297259	0.002021142	213.7961287	0.000793158
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0.013579273	0.0154591	0.13959407	0.030551257	0.001824159	192.959223	0.000630731
0.002589571	0.003778696	0.485743072	0.018565922	0.002028131	204.9484485	0.000841832
0.011195037	0.012744805	0.11509363	0.027167155	0.001702525	180.0928038	0.000519988
0.002365151	0.003451223	0.44992857	0.018063186	0.00203349	205.4900106	0.000769003
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0.279707291	0.318428154	1.29055788	0.282322056	0.005100332	539.5123285	0.012991869
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0.053130762	0.06048584	0.249284016	0.22080631	0.003501309	370.3679228	0.002467822
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0.28367583	0.322946073	1.31912742	0.362784369	0.005852281	619.0534376	0.0131762
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0.026923237	0.030650315	0.142480208	0.341459798	0.003987165	421.7617212	0.001250533
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0.028430353	0.032366067	0.172911585	0.372238727	0.003963	419.2055896	0.001320536
12.45376335	15.63791795	41.82400791	1.613625752	0.005292794	534.8520069	1.877092791
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5.512244115	6.920299666	26.42510957	1.33429844	0.003390961	342.6663545	0.830514572
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2.998478573	3.763877505	19.30540143	1.163693686	0.002383645	240.8741311	0.451640916
2.392998722	3.003640657	17.30669204	1.114128136	0.002107957	213.0151289	0.360392396
2.01041262	2.523278107	15.94502178	1.080768138	0.001944835	196.5311579	0.302737449
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2.278469567	2.858950638	22.20667454	1.214382914	0.002258265	228.2041593	0.342916247
0.025039959	0.036538249	0.925450966	0.042066791	0.006622845	669.2574137	0.007852621
0.096104028	0.109408046	3.010241132	0.0518465	0.006012876	636.0411274	0.004463848
0.015820177	0.023084765	0.842106806	0.036238475	0.005378561	543.5189639	0.004955638
0.071929961	0.081887478	2.253368753	0.043243315	0.005106395	540.1537408	0.003341009
0.010404409	0.015182089	0.755574444	0.032264263	0.004376801	442.2883158	0.003255572
0.03516307	0.040030817	1.10065326	0.029304594	0.004330566	458.0866453	0.001633257
0.007369224	0.010753154	0.699284449	0.028646589	0.003651134	368.9575339	0.002303676
0.013717164	0.015616079	0.428343475	0.019606167	0.003596518	380.4391451	0.000637136
0.005444683	0.007944869	0.639741759	0.026144192	0.003118085	315.0913984	0.001700677
0.008252558	0.009394989	0.257312154	0.015154576	0.003041226	321.7004437	0.000383316
0.004251769	0.006204172	0.588847147	0.024193283	0.002767074	279.6207323	0.001327268
0.006239687	0.007103468	0.194448146	0.012815494	0.002626672	277.8489996	0.000289822
0.003502558	0.005110925	0.544087809	0.022757395	0.002565767	259.2781256	0.001092991
0.004966339	0.005653847	0.154689934	0.011263937	0.002383342	252.1095447	0.000230677
0.003029616	0.004420808	0.501463844	0.021848717	0.002480137	250.6249863	0.000945297
0.0040988	0.004666211	0.127596462	0.010170916	0.002229288	235.8138012	0.000190381
0.002766977	0.004037567	0.464495339	0.021274503	0.002487055	251.3240243	0.000863478
0.003475496	0.003956622	0.108116514	0.00935874	0.002145368	226.9367311	0.00016143

0.002669036	0.003894652	0.432778573	0.02106464	0.002560076	258.7029994	0.000833253
0.003009682	0.003426323	0.093539424	0.008737142	0.002156119	228.0739049	0.000139794
0.002731711	0.003986106	0.407943917	0.021100764	0.002672196	270.0330483	0.000853374
0.002651152	0.003018161	0.082296444	0.008244125	0.002275458	240.6976447	0.000123141
0.002928586	0.004273385	0.382198731	0.021631236	0.002780448	280.9722231	0.000915639
0.002504831	0.002851584	0.077684193	0.008063532	0.002463864	260.6271145	0.000116345
0.003200669	0.004670408	0.342743446	0.023222546	0.002826292	285.6049403	0.00100162
0.00251302	0.002860906	0.077894735	0.008138742	0.002766573	292.6477193	0.000116725
0.003439805	0.005019356	0.328384641	0.024058092	0.002841952	287.1873958	0.001077009
0.002518729	0.002867405	0.078042103	0.00817047	0.002978262	315.0401494	0.00011699
0.063914065	0.093263253	0.325771621	0.189685617	0.032003876	3234.083287	0.023227037
0.85633019	0.974874988	2.256763593	11.48092999	0.016476473	1742.878809	0.0397749
0.040109749	0.058528052	0.295924798	0.165599175	0.025980108	2625.364327	0.014576301
0.641852085	0.730705925	1.715598556	9.582169921	0.014960708	1582.541449	0.029812802
0.02653621	0.038721576	0.269365466	0.147177006	0.021246306	2147.000058	0.009643535
0.316349213	0.360142547	0.888409987	6.52286547	0.012284038	1299.403712	0.014693816
0.01865897	0.027227126	0.247633162	0.130989261	0.017660599	1784.654096	0.006780864
0.128784126	0.146612165	0.401410091	4.442033656	0.010080514	1066.315283	0.005981776
0.01377563	0.020101367	0.227217985	0.119568117	0.015095286	1525.42188	0.005006207
0.08262119	0.094058732	0.272192273	3.519860463	0.009041811	956.4414705	0.003837596
0.010737086	0.015667531	0.209198691	0.110745991	0.013394464	1353.548968	0.003901969
0.064632532	0.07357984	0.221439518	3.022226645	0.008487107	897.7649466	0.003002058
0.008833721	0.012890145	0.193236355	0.104114613	0.012416397	1254.712491	0.003210266
0.052482429	0.059747756	0.187549196	2.678735224	0.008026772	849.0707064	0.002437709
0.007653644	0.01116818	0.178666879	0.099792778	0.012019356	1214.590351	0.002781414
0.043899039	0.049976137	0.164108893	2.431743706	0.007660804	810.35875	0.002039026
0.007001733	0.010216912	0.165781929	0.096994639	0.012061636	1218.862898	0.002544503
0.037783027	0.043013464	0.148015668	2.247211653	0.007389206	781.6290774	0.001754949
0.006760578	0.00986502	0.154314197	0.095753839	0.012415698	1254.641857	0.002456865
0.033543717	0.038187292	0.137602309	2.109929701	0.007211975	762.8816885	0.001558042
0.006897638	0.010065017	0.144256232	0.095779581	0.012925669	1306.175879	0.002506673
0.030837975	0.035106985	0.131900292	2.008261625	0.007129114	754.1165833	0.001432365
0.007405831	0.010806571	0.134892648	0.09782449	0.013449837	1359.14453	0.002691356
0.030380598	0.034586291	0.132927177	1.976830868	0.00714062	755.3337619	0.001411121
0.00828675	0.012092006	0.124986902	0.103959785	0.013860651	1400.658512	0.003011491
0.03177234	0.036170697	0.13955607	2.007046362	0.007246496	766.5332242	0.001475764
0.008951469	0.013061963	0.120537105	0.107575671	0.013988141	1413.541669	0.003253057
0.033979907	0.038683864	0.148870432	2.044387745	0.007446739	787.7149702	0.001578302
0.06380926	0.093110322	0.357663439	0.156824008	0.031135882	3146.370071	0.016837539
0.053462629	0.060863133	0.80533821	7.184891452	0.01805063	1910.624161	0.002483201
0.040043978	0.058432079	0.324894725	0.13691036	0.025275537	2554.165429	0.010566523
0.03362695	0.038281723	0.495308468	5.42317541	0.014925135	1579.79661	0.001561885
0.026492697	0.038658081	0.295735334	0.121679695	0.020670161	2088.778954	0.006990706
0.018689145	0.021276169	0.268456402	3.806095967	0.011745339	1243.221394	0.000868062
0.018628374	0.027182479	0.271875518	0.108296355	0.017181732	1736.263208	0.004915524

0.012656986	0.014409015	0.179301425	3.005848	0.010029214	1061.572904	0.000587884
0.013753041	0.020068405	0.249461772	0.098853838	0.014686006	1484.062917	0.003629056
0.009932999	0.011307963	0.137048943	2.342389491	0.008751828	926.3640341	0.000461362
0.01071948	0.01564184	0.229678457	0.091560079	0.013031312	1316.851357	0.002828581
0.0080323	0.009144162	0.105155018	1.746194246	0.007688272	813.7887319	0.00037308
0.008819236	0.012869008	0.212153469	0.086077538	0.01207976	1220.69429	0.002327158
0.006613317	0.007528758	0.079283759	1.269484386	0.006870908	727.2723339	0.000307171
0.007641094	0.011149866	0.196157696	0.082504428	0.011693466	1181.658193	0.002016278
0.005675504	0.006461129	0.059433818	0.913428448	0.006298105	666.6421556	0.000263612
0.006990251	0.010200158	0.182011357	0.080191046	0.011734572	1185.812142	0.001844538
0.005218452	0.00594081	0.045604211	0.676509563	0.005974338	632.372077	0.000242384
0.006749492	0.009848844	0.169420977	0.079165205	0.012079001	1220.61763	0.001781009
0.005241851	0.005967448	0.037794224	0.559529983	0.005894803	623.9534211	0.00024347
0.006886327	0.010048513	0.158378375	0.079186488	0.01257511	1270.750853	0.001817116
0.005745462	0.006540771	0.036003343	0.562077918	0.00606072	641.5154636	0.000266862
0.007393687	0.010788851	0.148098132	0.080877132	0.013085032	1322.279941	0.001950994
0.006727998	0.007659314	0.040229517	0.685004547	0.006471631	685.0096248	0.000312498
0.008273161	0.012072178	0.13722265	0.085949532	0.013484677	1362.665216	0.002183064
0.008187306	0.009320625	0.050468574	0.931229472	0.007131631	754.8692649	0.000380279
0.008936791	0.013040544	0.132337236	0.088938993	0.013608698	1375.197868	0.002358177
0.010059017	0.011451426	0.066179782	0.932429057	0.007131631	754.8692649	0.000467215
0	0	0	0	0	0	0
0.098776745	0.144134795	0.601604013	0.236135959	0.031442203	3177.324654	0.023743941
0.074842053	0.085201981	1.203144482	9.151903697	0.022189027	2348.665528	0.00347622
0.061988085	0.090452868	0.546485743	0.206151212	0.025524297	2579.303324	0.014900688
0.047678051	0.054277831	0.753049179	6.993335409	0.018495695	1957.733444	0.002214522
0.041010699	0.059842716	0.497438497	0.183217811	0.020873768	2109.354045	0.009858147
0.027246191	0.031017714	0.421482235	5.011502653	0.014774702	1563.873567	0.001265515
0.028836726	0.042078483	0.457305346	0.163066	0.017351174	1753.385802	0.006931768
0.017935649	0.020418371	0.271245451	3.90132234	0.01240322	1312.856752	0.000833064
0.021289709	0.031065894	0.419604541	0.148848038	0.014830966	1498.711538	0.005117618
0.014167386	0.01612849	0.20874631	3.053178773	0.010858285	1149.328427	0.000658038
0.016593757	0.024213571	0.386328225	0.137865544	0.013159993	1329.854923	0.003988805
0.01145889	0.013045074	0.160144878	2.27895662	0.009539541	1009.741916	0.000532236
0.013652179	0.019921227	0.356850503	0.12961027	0.01219901	1232.744932	0.003281709
0.009395886	0.010696501	0.120089591	1.658226045	0.008506208	900.3655811	0.000436415
0.011828415	0.017259995	0.329944982	0.1242301	0.011808785	1193.311575	0.002843313
0.008135212	0.009261319	0.090890523	1.206514532	0.007836207	829.4473436	0.00037786
0.01082091	0.015789847	0.306150282	0.120746752	0.011850125	1197.489105	0.002601129
0.007463691	0.008496844	0.06947589	0.903425652	0.007422234	785.6290335	0.000346669
0.010448215	0.015246011	0.284972766	0.119202104	0.012197746	1232.617184	0.002511541
0.00749704	0.008534809	0.057499863	0.75988792	0.007323062	775.1319385	0.000348218
0.010660036	0.015555099	0.266398675	0.11923415	0.012698539	1283.223742	0.002562458
0.008149257	0.009277309	0.054184028	0.771867916	0.007495958	793.4326463	0.000378512
0.011445429	0.016701143	0.2491069	0.121779818	0.013213295	1335.241336	0.002751251

0.009649641	0.010985382	0.061310663	0.947543971	0.008054087	852.5095244	0.000448201
0.012806855	0.018687733	0.23081391	0.129417527	0.013616711	1376.007586	0.00307851
0.012501396	0.014231888	0.082753102	1.310528941	0.00918273	971.9742021	0.000580657
0.013834154	0.020186764	0.22259645	0.133918874	0.013741894	1388.657762	0.003325452
0.015502325	0.017648217	0.10968522	1.318626695	0.009259455	980.0953838	0.000720043
0	0	0	0	0	0	0
0.056849911	0.082955257	0.339614947	0.250637331	0.016405829	1657.855972	0.012510736
0.105712075	0.12034515	0.856156951	6.91804285	0.018995014	2010.585439	0.004910052
0.035837724	0.052294323	0.309859886	0.216978634	0.013318025	1345.824569	0.007886667
0.075807368	0.086300918	0.55032861	5.282908259	0.015778422	1670.115339	0.003521056
0.023788226	0.034711724	0.28295398	0.191580419	0.01089151	1100.618261	0.005234981
0.046817872	0.053298583	0.312678227	3.746139582	0.012468125	1319.72687	0.002174569
0.016661184	0.024311961	0.259133903	0.171814439	0.009053492	914.8813281	0.003666561
0.031858383	0.036268343	0.211518679	2.974249845	0.010658248	1128.154934	0.001479739
0.012304288	0.017954388	0.237838152	0.15673645	0.007738512	781.9987919	0.002707756
0.024081338	0.02741477	0.160817395	2.35873603	0.009324497	986.9799704	0.001118516
0.009586359	0.013988392	0.218889198	0.145277312	0.006866633	693.8929525	0.002109632
0.018660818	0.021243921	0.123306389	1.817384065	0.008224648	870.5630888	0.000866747
0.007867147	0.011479722	0.201692282	0.13724097	0.006365198	643.2214323	0.001731292
0.014617821	0.016641276	0.093543885	1.384987544	0.007378934	781.0458264	0.00067896
0.006815133	0.009944626	0.186456997	0.131585486	0.006161572	622.6444605	0.001499779
0.011716238	0.013338045	0.070950953	1.059672476	0.006784731	718.1506453	0.000544189
0.006232087	0.009093847	0.172942315	0.128043868	0.006183121	624.8221265	0.001371471
0.009782075	0.011136148	0.055100966	0.84117163	0.006440504	681.7148453	0.000454352
0.006029267	0.008797892	0.161287106	0.125907945	0.006364485	643.1494615	0.001326837
0.00868711	0.009889613	0.045679526	0.728874993	0.006345281	671.6356535	0.000403494
0.00607591	0.008865954	0.148970558	0.128922289	0.006625734	669.549365	0.001337102
0.008336852	0.009490871	0.042454949	0.725630165	0.006498413	687.8444142	0.000387225
0.006543299	0.009547966	0.139709763	0.130858571	0.00689431	696.6897938	0.001439958
0.008933892	0.010170556	0.045712778	0.82829001	0.006904989	730.8797163	0.000414956
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0.061663007	0.089978515	0.505397349	0.427925442	0.027639932	2793.094316	0.020579213
0	0	0	0	0	0	0
0.125090459	8.93503278	57.16069305	0.697321972	0	2631.011166	8.754914874
0.045863977	0.066924607	0.531691095	0.458651007	0.024717888	2497.813351	0.01519939
0	0	0	0	0	0	0
0.104035567	7.43111191	50.77279635	0.575956191	0	2261.906992	7.28131097
0.0299524	0.043706471	0.478676399	0.397036106	0.020020487	2023.127533	0.00993244
0	0	0	0	0	0	0
0.091719244	6.551374598	47.03611632	0.50496176	0	2045.994891	6.419307945
0.021550502	0.031446441	0.448792089	0.368166505	0.016912472	1709.053702	0.007138912
0	0	0	0	0	0	0
0.082980675	5.927191041	44.38489965	0.454590409	0	1892.802818	5.807707065

0.00514547	0.007508258	0.168358208	0.058166923	0.008583324	867.3694925	0.00184041
0	0	0	0	0	0	0
0.076202513	5.443036661	42.32845623	0.415519355	0	1773.977814	5.333312568
0.004010084	0.005851506	0.154990645	0.053886724	0.007616253	769.6442029	0.00143431
0	0	0	0	0	0	0
0.070664352	5.047453728	40.64821962	0.383595979	0	1676.890717	4.94570404
0.003299938	0.004815261	0.143194981	0.05063861	0.007060121	713.4454007	0.001180308
0	0	0	0	0	0	0
0.065981904	4.712993125	39.2275998	0.356605149	0	1594.804746	4.6179857
0.002857666	0.004169899	0.132333459	0.048581554	0.006834342	690.629796	0.001022118
0	0	0	0	0	0	0
0.061925782	4.423270171	37.99700294	0.333224628	0	1523.698644	4.334103161
0.002615832	0.003817016	0.12286179	0.047166883	0.006858353	693.05622	0.00093562
0	0	0	0	0	0	0
0.05834803	4.167716415	36.91153959	0.312601548	0	1460.978616	4.083701015
0.002525137	0.003684674	0.114336853	0.046588389	0.007059635	713.3963172	0.00090318
0	0	0	0	0	0	0
0.055147621	3.939115791	35.94055953	0.294153574	0	1404.87364	3.859708664
0.002576974	0.003760315	0.106910702	0.046579451	0.007349564	742.6945311	0.000921721
0	0	0	0	0	0	0
0.052252499	3.732321372	35.06220122	0.277465351	0	1354.120515	3.657082934
0.002763288	0.004032184	0.099846361	0.047687194	0.007647562	772.8080585	0.000988361
0	0	0	0	0	0	0
0.04960946	3.543532859	34.26032291	0.262230197	0	1307.786543	3.472100136
0.003085331	0.004502108	0.092319427	0.050832271	0.007881104	796.4081577	0.001103548
0	0	0	0	0	0	0
0.0471781	3.369864261	33.52266637	0.248215215	0	1265.16342	3.301932458
0.003336371	0.004868424	0.089124814	0.052483372	0.007953576	803.7316169	0.001193339
0	0	0	0	0	0	0
0.044927012	3.209072255	32.8397031	0.235239368	0	1225.700572	3.144381796
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0

PM10_RUNEX	PM2_5_RUNEX	N2O_RUNEX		CO RUNEX*VMT	Calculated VMT
0.007789892	0.007162518	0.240183148		108.1099484	1.974469397
0.011000216	0.010524352	0.403201334		11106.66361	5367.867939
0.005151467	0.004928617	0.854666176		73857.85867	1634.68163
0.004901381	0.004506639	0.209684485		29.61601997	0.595447299
0.010025122	0.009591439	0.356108019		2154.744707	1737.368018
0.004627074	0.004426909	0.757893409		143755.2051	3928.554504
0.00325342	0.002991399	0.186358023		69.69227722	1.539361905
0.007642743	0.007312121	0.263033709		3831.899034	5557.098016
0.003951982	0.003781021	0.635861507		46269.15903	1795.427271
0.002278229	0.002094748	0.165860825		181.113822	4.351518038
0.005211055	0.004985627	0.244309789		30088.26779	71702.33516
0.003503092	0.00335155	0.555416473		30750.06051	1649.453369
0.00168302	0.001547475	0.151399179		675.2277806	17.68094992
0.006154795	0.005888541	0.194044612		18582.09492	52600.63042
0.003181854	0.003044208	0.512531285		32562.44738	2383.365471
0.001311639	0.001206004	0.140228454		1412.533132	40.17331558
0.006702118	0.006412187	0.170348596		33000.13307	121721.5536
0.002932056	0.002805217	0.485227121		26954.58548	2677.095081
0.001078388	0.000991538	0.13183169		1527.4241	47.02933052
0.008095396	0.007745193	0.152430148		28640.57043	140174.7574
0.002728723	0.00261068	0.463607019		49090.52732	6615.765639
0.000935343	0.000860013	0.126359309		1364.341742	45.43359585
0.010332678	0.009885691	0.139690777		22051.57525	143969.928
0.002560211	0.002449457	0.44585647		26042.49049	4762.190213
0.000855856	0.000786928	0.122816258		1834.487247	65.83782945
0.013415312	0.012834972	0.132444792		22009.19702	187278.8316
0.00241927	0.002314613	0.430894565		15655.43589	3884.335083
0.000826164	0.000759627	0.121245136		2755.415987	106.2378535
0.017343915	0.016593625	0.130611525		30331.72194	311432.7743
0.002301081	0.002201537	0.418029112		4016.266137	1352.006875
0.00084133	0.000773571	0.121277731		2822.972965	116.431403
0.022116866	0.0211601	0.134295617		32514.18007	350467.5539
0	0	0		0	0
0.000903858	0.000831064	0.12386703		3449.400747	152.1434875
0.027730713	0.026531095	0.143444243		56287.76612	542934.5171
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0.001024401	0.000941899	0.131635644	1559.976691	74.2594284
0.034184649	0.032705837	0.158068454	65643.38343	504599.3667
0	0	0	0	0
0.001112674	0.001023062	0.13621414	421.8680639	20.82350766
0.034184649	0.032705837	0.158068454	28633.64163	167176.7926
0	0	0	0	0
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0	0	0	0	0
0.003979321	0.003658839	0.005317376	46371.68904	61518.30522
0.001961612	0.001876754	0.061799498	2064.899519	762.5694324
0.002503796	0.002302148	0.004608114	17937.12539	26131.56776
0.001821787	0.001742978	0.051484815	656.592843	323.9220379
0.001661971	0.001528121	0.004120098	53700.23376	87185.39219
0.001579844	0.001511501	0.042346114	1069.897269	1080.733853
0.001163813	0.001070083	0.003670663	157237.5716	275623.8024
0.001344068	0.001285924	0.034737563	1315.853028	3416.581224
0.00085976	0.000790517	0.003357124	866286.7976	1659483.876
0.001150185	0.001100428	0.029118472	4757.944692	20570.65247
0.000670045	0.000616081	0.003110366	1654346.224	3442256.924
0.001017732	0.000973705	0.02522194	7457.092359	42669.57451
0.000550891	0.000506524	0.002926679	1646747.033	3707746.973
0.00091954	0.000879761	0.022800126	6388.822438	45960.53963
0.000477817	0.000439335	0.002807946	1239803.146	3029036.273
0.000843489	0.000807	0.021335816	4304.241012	37547.36843
0.000437211	0.000401999	0.002729923	1135178.054	2994472.655
0.00078274	0.000748879	0.020608759	3604.417303	37118.92427
0.000422042	0.000388052	0.002696216	1257809.178	3561562.616
0.000733154	0.000701438	0.02066122	3707.415152	44148.46562
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0.000675278	0.000646066	0.023439045	3224.027603	46291.74193
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0.000678271	0.000648929	0.02635023	2295.25923	32896.7805
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0.010950392	0.010476683	0.116148997	2.352419534	0.848816489
0.002800471	0.002574929	0.004967554	1929.747947	2644.366308
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0.001859209	0.001709474	0.004438868	5775.790752	8822.666735
0.008480456	0.008113595	0.081067723	1.222952555	1.202965494
0.001302127	0.001197258	0.003951861	16896.7234	27891.56407
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0.00485616	0.004646085	0.043583289	7.516931257	51.15870398
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0.004453716	0.004261051	0.040677178	5.098694606	41.79399812
0.000489305	0.000449898	0.00293855	121912.0148	303023.6329
0.004139632	0.003960554	0.039219701	4.309323881	41.31709667
0.000472298	0.00043426	0.002903534	135104.9244	360409.9176
0.003891759	0.003723403	0.039284854	4.490670609	49.14168332
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0.00369705	0.003537118	0.041075515	3.406809373	41.60786582
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0.000635779	0.000584575	0.003264066	16691.10938	58656.11229
0.003724809	0.003563675	0.053919182	0.661434208	7.997726905
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0.0487424	0.046633825	0.118536625	246.6680037	1870.109612
0.000868617	0.000798661	0.01157797	730.5401717	5415.715242
0.054653179	0.052288907	0.118727949	360.5696641	2712.535338
0.000984459	0.000905174	0.01230411	330.3836588	2643.346257
0.062169543	0.059480116	0.120488348	239.8392242	1718.586832
0.00106929	0.000983173	0.012732066	89.34640839	741.2357218
0.071008559	0.067936761	0.123817824	77.34174996	519.5239175
0.007762759	0.00713757	0.014082124	76.13243118	212.8605354
0.005046758	0.004828437	0.300323511	1745.464172	2167.367885
0.004884309	0.004490942	0.012293964	20.8559863	64.19305915
0.004434316	0.00424249	0.248322027	306.9768439	619.7690203
0.003242088	0.00298098	0.010926315	49.07820769	165.9531415
0.003505071	0.003353443	0.19541709	459.6975902	1712.37336
0.002270294	0.002087452	0.009724549	127.5427081	469.1217098

0.002969555	0.002841093	0.166864477	822.9223974	4589.603222
0.001677158	0.001542085	0.008876651	475.5041818	1906.120435
0.002830236	0.002707801	0.145611526	2618.469752	19106.09232
0.001307071	0.001201803	0.008221703	994.724196	4330.942519
0.003080218	0.002946969	0.127916256	4649.885296	44219.33792
0.001074632	0.000988085	0.007729394	1075.631909	5070.065148
0.003717779	0.00355695	0.114317083	4150.144061	52345.45017
0.000932085	0.000857018	0.007408544	960.7871927	4898.034659
0.004742905	0.004537729	0.104786863	3029.433846	50971.55045
0.000852875	0.000784187	0.007200812	1291.86977	7097.742639
0.006155591	0.005889302	0.099400084	3079.380009	67524.02763
0.000823286	0.000756981	0.007108696	1940.399762	11453.12579
0.007955835	0.007611669	0.098076789	4267.063295	112902.5239
0.000838399	0.000770877	0.007110607	1987.974263	12552.05617
0.010143644	0.009704835	0.100837297	4848.820251	134676.9438
0.00090071	0.00082817	0.00726242	2429.112852	16402.04921
0.012716372	0.012166268	0.107673974	7858.622271	195344.683
0.001020833	0.000938618	0.0077179	1098.555867	8005.645322
0.01567297	0.014994965	0.118654936	6246.240538	123764.9498
0.001108798	0.001019499	0.00798634	297.0849753	2244.908428
0.01567297	0.014994965	0.118654936	2476.036654	37413.79277
0	0	0	0	0
0.007675729	0.007057549	0.017575785	25.56360618	42.492413
0.006985713	0.006683515	0.369177514	57.30393798	47.62847593
0.00482955	0.004440593	0.015343996	7.002984299	12.81457822
0.006199148	0.005930976	0.307728434	10.58017686	14.04978209
0.00320574	0.00294756	0.013637045	16.47938932	33.12849615
0.004993751	0.004777723	0.245819147	17.3848042	41.24682552
0.002244841	0.002064049	0.01213713	42.82605336	93.64870478
0.004163296	0.003983193	0.206362799	27.99209278	103.198386
0.001658355	0.001524796	0.011078876	159.66391	380.5104437
0.003989254	0.003816681	0.180658423	90.7834148	434.8982984
0.001292417	0.00118833	0.010261441	334.0066409	864.5670173
0.004351051	0.004162826	0.158717368	161.2001477	1006.589466
0.001062584	0.000977007	0.009646994	361.1736824	1012.114819
0.005249324	0.00502224	0.141524931	141.7806641	1180.62409
0.000921635	0.000847409	0.009246544	322.611337	977.7731284
0.006742092	0.006450432	0.130377572	106.3734429	1170.346909
0.000843314	0.000775396	0.008987275	433.7816291	1416.891163
0.008744868	0.008366569	0.123489944	107.0610646	1540.981543
0.000814056	0.000748495	0.008872306	651.5438239	2286.337156
0.011304387	0.010815364	0.121839946	147.8930504	2572.059177
0.000829	0.000762235	0.008874691	667.5183016	2505.711797
0.014339928	0.013719589	0.124716563	163.0980849	3010.076802
0.000890612	0.000818885	0.009064167	815.6429965	3274.268985

0.018096746	0.017313889	0.134002625	273.5426435	4461.5835
0.001009388	0.000928095	0.009632648	368.8710463	1598.131785
0.02317099	0.022168624	0.152780809	270.6377649	3270.424416
0.001096367	0.001008069	0.009967687	99.75464059	448.1412013
0.023385233	0.022373598	0.154057346	112.8745511	1029.077128
0	0	0	0	0
0.006550883	0.006023295	0.022219067	45.74511713	134.6970075
0.007710379	0.007376832	0.316036032	314.0794239	366.8479517
0.0041218	0.003789843	0.019235214	146.2867447	472.1061075
0.006894831	0.006596564	0.262518874	707.6033182	1285.783268
0.002735952	0.002515607	0.016983656	267.1686039	944.2122151
0.005705141	0.005458339	0.207442686	804.0728662	2571.566536
0.001915869	0.001761571	0.015231396	332.1097714	1281.614514
0.004963863	0.004749129	0.177330245	738.302424	3490.483328
0.00141533	0.001301344	0.013894728	481.173847	2023.114636
0.00464861	0.004447513	0.155139507	886.0978133	5509.962499
0.001103019	0.001014185	0.012878873	531.289099	2427.205659
0.004731663	0.004526974	0.136840394	815.117665	6610.506354
0.000906867	0.000833831	0.012166449	502.4600999	2491.221257
0.005193126	0.004968473	0.122769527	634.6815207	6784.853145
0.000786573	0.000723225	0.011665089	313.5658602	1681.706049
0.006027	0.005766274	0.112883281	324.9649142	4580.134561
0.00071973	0.000661765	0.011351123	139.5371373	806.8420813
0.007229552	0.006916805	0.10715608	121.0809727	2197.438312
0.00069476	0.000638806	0.011161773	65.17467177	404.0910226
0.008798301	0.00841769	0.105571772	50.27232171	1100.543855
0.000707513	0.000650532	0.011428996	89.60037762	601.4636642
0.010731511	0.010267271	0.108119563	69.54499351	1638.089199
0.000760097	0.000698881	0.011600647	46.76683381	334.7427753
0.012970677	0.012409571	0.114884113	41.67513148	911.673568
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0.007801816	0.007173482	0.041012109	91.04779059	180.1509066
0	0	0	0	0
0.005935978	0.00567919	0.536348838	23821.30833	416.7428184
0.004908884	0.004513537	0.043601423	235.3212356	442.5901389
0	0	0	0	0
0.004865336	0.004654864	0.461104537	65709.20313	1294.181291
0.0032584	0.002995978	0.037771186	378.7420336	791.2277149
0	0	0	0	0
0.003924932	0.003755141	0.417089443	106460.2406	2263.372253
0.002281717	0.002097954	0.034983295	3234.826388	7207.850737
0	0	0	0	0
0.003114765	0.002980022	0.385860237	949266.7635	21387.15579

0.001685596	0.001549844	0.006443968		71.85948027	426.8249304
0	0	0		0	0
0.002434837	0.002329507	0.361636982		4691.863365	110.8441881
0.001313647	0.00120785	0.00596979		148.7973624	960.0409234
0	0	0		0	0
0.001885147	0.001803596	0.341845142		10134.31555	249.3175753
0.001080039	0.000993056	0.005609951		157.7081768	1101.352688
0	0	0		0	0
0.001465694	0.001402289	0.32511138		11219.70145	286.0154969
0.000936774	0.00086133	0.005382062		146.8801421	1109.924453
0	0	0		0	0
0.00117648	0.001125586	0.310615936		10952.31461	288.2415392
0.000857166	0.000788133	0.005225339		200.0916747	1628.591561
0	0	0		0	0
0.001017503	0.000973487	0.297830048		15611.24317	422.9366574
0.000827428	0.00076079	0.005161251		287.3430694	2513.127326
0	0	0		0	0
0.000988765	0.000945991	0.286392682		23456.46026	652.6459402
0.000842617	0.000774756	0.005160261		274.2102857	2564.853474
0	0	0		0	0
0.001090264	0.0010431	0.276046325		23354.19413	666.0789488
0.000905242	0.000832336	0.005282981		344.855705	3453.863542
0	0	0		0	0
0.001322001	0.001264812	0.266600842		30729.80296	896.9501846
0.001025969	0.00094334	0.005631406		228.2588858	2472.490267
0	0	0		0	0
0.001683976	0.001611128	0.25791184		21524.6597	642.0927101
0.001114377	0.001024628	0.005814321		67.79313001	760.65382
0	0	0		0	0
0.00217619	0.002082049	0.24986708		6487.0825	197.5377938
0	0	0		0	0
0	0	0		0	0
0	0	0		0	0

Aggregate Emission Factors by Speed.

Speed	CO RUNEX*VMT	VMT
5	216410.8695	114201.9346
10	251508.2619	53431.05735
15	269859.4963	161592.1129
20	1328662.188	569564.8573
25	1764899.992	2826447.653
30	3318620.318	5877376.725
35	3318517.666	6352570.621
40	2500504.134	5244130.806
45	2307521.484	5279185.271

50	2587174	6437415.774
55	2109023.725	5611545.326
60	2535972.37	7130586.71
65	1741236.834	5229904.22
70	397631.2148	1236888.071
75	0	0

50	2587174	6437415.774
55	2109023.725	5611545.326
60	2535972.37	7130586.71
65	1741236.834	5229904.22

CO_RUNEX
54.75392453
2.0691015
45.18180013
49.73743275
1.240235048
36.59239168
45.27348443
0.689550377
25.770556
41.62083677
0.419627446
18.64257644
38.18956468
0.353267533
13.66238111
35.16097966
0.271111665
10.06859475
32.47811702
0.204320457
7.420233726
30.0293586
0.153167926
5.468595189
27.8637261
0.117521008
4.030403031
25.93629199
0.097394123
2.970595943
24.24580391
0.092773724
0
22.67202365
0.103673214
0

21.00711956

0.130090103

0

20.25922197

0.171277611

0

0

0

0.753786842

2.707818372

0.686415968

2.027008867

0.61593155

0.989972939

0.570478929

0.385137347

0.522021823

0.231297704

0.480599287

0.174763692

0.444136843

0.139006689

0.40930614

0.114634958

0.379091141

0.097104573

0.353162169

0.083976082

0.332904934

0.073835897

0.311790641

0.069645848

0.27909927

0.069771546

0.267231187

0.069859528

0.802163055

2.771411213

0.729758181

2.073828024

0.654653624

1.016614825

0.605800498

0.399839476

0.554162049

0.242089574
0.510040974
0.183756778
0.471253727
0.146933575
0.434330904
0.121995857
0.402318504
0.104298807
0.374864613
0.091382108
0.353380598
0.081878974
0.331115005
0.078938572
0.296975237
0.081152879
0.28455874
0.082702775
0.896214022
2.722096459
0.815572526
2.037721616
0.731782667
0.995087044
0.677318843
0.386991487
0.619664127
0.232349946
0.570381341
0.175532545
0.527034601
0.13959407
0.485743072
0.11509363
0.44992857
0.097463158
0.419200216
0.084249199
0.395143199
0.074028217
0.370191407
0.069773979
0.331918077
0.069835212

0.317991827
0.069878072
0.224515685
3.483579453
0.20401889
2.603799218
0.185405466
1.29055788
0.170670538
0.523771008
0.156533127
0.324370677
0.14408903
0.249284016
0.133099044
0.202150366
0.123009985
0.170828307
0.114272101
0.149501251
0.106336579
0.135213061
0.099348829
0.126545304
0.09270416
0.127897446
0.08550437
0.138491063
0.082454505
0.145906025
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0.154545823
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0.215703443
0.121448282

0.183882956
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0.104986557
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0.1468169
0.084418829
0.1621672
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26.42510957
22.13121669
19.30540143
17.30669204
15.94502178
15.13784475
14.7666975
14.88431116
15.51849688
16.98589854
20.09000445
22.20667454
0.925450966
3.010241132
0.842106806
2.253368753
0.755574444
1.10065326
0.699284449
0.428343475
0.639741759
0.257312154
0.588847147
0.194448146
0.544087809
0.154689934
0.501463844
0.127596462
0.464495339
0.108116514

0.432778573
0.093539424
0.407943917
0.082296444
0.382198731
0.077684193
0.342743446
0.077894735
0.328384641
0.078042103
0.325771621
2.256763593
0.295924798
1.715598556
0.269365466
0.888409987
0.247633162
0.401410091
0.227217985
0.272192273
0.209198691
0.221439518
0.193236355
0.187549196
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0.164108893
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0.154314197
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0.357663439
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0.268456402
0.271875518

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0.105155018
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0.196157696
0.059433818
0.182011357
0.045604211
0.169420977
0.037794224
0.158378375
0.036003343
0.148098132
0.040229517
0.13722265
0.050468574
0.132337236
0.066179782
0
0.601604013
1.203144482
0.546485743
0.753049179
0.497438497
0.421482235
0.457305346
0.271245451
0.419604541
0.20874631
0.386328225
0.160144878
0.356850503
0.120089591
0.329944982
0.090890523
0.306150282
0.06947589
0.284972766
0.057499863
0.266398675
0.054184028
0.2491069

0.061310663
0.23081391
0.082753102
0.22259645
0.10968522
0
0.339614947
0.856156951
0.309859886
0.55032861
0.28295398
0.312678227
0.259133903
0.211518679
0.237838152
0.160817395
0.218889198
0.123306389
0.201692282
0.093543885
0.186456997
0.070950953
0.172942315
0.055100966
0.161287106
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0.148970558
0.042454949
0.139709763
0.045712778
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0.505397349
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57.16069305
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50.77279635
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0
44.38489965

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42.32845623

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0

40.64821962

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37.99700294

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32.8397031

0

0

0

CO_RUNEX
1.894984269
4.707154871
1.670004132
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0.624423378
0.564643118
0.522389732
0.476819558
0.43709803

0.401896365
0.37583653
0.355647084
0.33293857
0.32147712
N/A

EMFAC2014 (v1.0.7) Emission Rates
Region Type: Sub-Area
Region: Riverside (SC)
Calendar Year: 2025
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, g/mile for RUNEX, PMBW and PMTW

Region	CalYr	VehClass	MdlYr	Speed	Fuel	VMT	ROG_RUNEX
Riverside (SC)	2025	HHDT	Aggregated	5	GAS	18.38688187	2.244355825
Riverside (SC)	2025	HHDT	Aggregated	5	DSL	6200.737943	0.570190994
Riverside (SC)	2025	HHDT	Aggregated	10	GAS	5.017550874	1.41411103
Riverside (SC)	2025	HHDT	Aggregated	10	DSL	5248.789543	0.42450355
Riverside (SC)	2025	HHDT	Aggregated	15	GAS	15.17687637	0.935303603
Riverside (SC)	2025	HHDT	Aggregated	15	DSL	5426.61835	0.308692956
Riverside (SC)	2025	HHDT	Aggregated	20	GAS	40.47866424	0.655404009
Riverside (SC)	2025	HHDT	Aggregated	20	DSL	68299.16796	0.198644595
Riverside (SC)	2025	HHDT	Aggregated	25	GAS	149.8167002	0.484252864
Riverside (SC)	2025	HHDT	Aggregated	25	DSL	41812.48961	0.174251693
Riverside (SC)	2025	HHDT	Aggregated	30	GAS	360.7134055	0.377659595
Riverside (SC)	2025	HHDT	Aggregated	30	DSL	97170.75721	0.129786883
Riverside (SC)	2025	HHDT	Aggregated	35	GAS	448.6307611	0.310614205
Riverside (SC)	2025	HHDT	Aggregated	35	DSL	124294.3899	0.095119192
Riverside (SC)	2025	HHDT	Aggregated	40	GAS	420.456035	0.269444664
Riverside (SC)	2025	HHDT	Aggregated	40	DSL	120085.0724	0.070506972
Riverside (SC)	2025	HHDT	Aggregated	45	GAS	475.4692839	0.246154916
Riverside (SC)	2025	HHDT	Aggregated	45	DSL	131457.2868	0.05221162
Riverside (SC)	2025	HHDT	Aggregated	50	GAS	967.203728	0.238109904
Riverside (SC)	2025	HHDT	Aggregated	50	DSL	236338.6097	0.03871776
Riverside (SC)	2025	HHDT	Aggregated	55	GAS	1107.666438	0.242712916
Riverside (SC)	2025	HHDT	Aggregated	55	DSL	279332.2968	0.028624895
Riverside (SC)	2025	HHDT	Aggregated	60	GAS	1616.1236	0.26097963
Riverside (SC)	2025	HHDT	Aggregated	60	DSL	466520.6244	0.024621224
Riverside (SC)	2025	HHDT	Aggregated	65	GAS	913.0904965	0.292141074
Riverside (SC)	2025	HHDT	Aggregated	65	DSL	506650.4178	0.024621224
Riverside (SC)	2025	HHDT	Aggregated	70	GAS	184.8375007	0.314456248
Riverside (SC)	2025	HHDT	Aggregated	70	DSL	136783.3564	0.024621224
Riverside (SC)	2025	HHDT	Aggregated	75	DSL	0	0
Riverside (SC)	2025	LDA	Aggregated	5	GAS	49149.40743	0.054440854
Riverside (SC)	2025	LDA	Aggregated	5	DSL	605.7446461	0.149459261
Riverside (SC)	2025	LDA	Aggregated	10	GAS	19373.57168	0.034653764
Riverside (SC)	2025	LDA	Aggregated	10	DSL	238.7706777	0.111181539
Riverside (SC)	2025	LDA	Aggregated	15	GAS	73481.83805	0.022826953
Riverside (SC)	2025	LDA	Aggregated	15	DSL	905.6310607	0.056527798
Riverside (SC)	2025	LDA	Aggregated	20	GAS	207271.1838	0.016096337

Riverside (SC)	2025	LDA	Aggregated	20	DSL	2554.525404	0.024514393
Riverside (SC)	2025	LDA	Aggregated	25	GAS	1343148.549	0.011920778
Riverside (SC)	2025	LDA	Aggregated	25	DSL	16553.71011	0.015737523
Riverside (SC)	2025	LDA	Aggregated	30	GAS	2810731.825	0.009323525
Riverside (SC)	2025	LDA	Aggregated	30	DSL	34641.02303	0.012215575
Riverside (SC)	2025	LDA	Aggregated	35	GAS	3195358.635	0.00767911
Riverside (SC)	2025	LDA	Aggregated	35	DSL	39381.37786	0.009983401
Riverside (SC)	2025	LDA	Aggregated	40	GAS	2600122.703	0.006659908
Riverside (SC)	2025	LDA	Aggregated	40	DSL	32045.35902	0.008499999
Riverside (SC)	2025	LDA	Aggregated	45	GAS	2169198.14	0.00605779
Riverside (SC)	2025	LDA	Aggregated	45	DSL	26734.40492	0.007498788
Riverside (SC)	2025	LDA	Aggregated	50	GAS	2961081.998	0.00587208
Riverside (SC)	2025	LDA	Aggregated	50	DSL	36494.02223	0.006840165
Riverside (SC)	2025	LDA	Aggregated	55	GAS	2539381.278	0.005971915
Riverside (SC)	2025	LDA	Aggregated	55	DSL	31296.7479	0.006453229
Riverside (SC)	2025	LDA	Aggregated	60	GAS	3666190.825	0.00643532
Riverside (SC)	2025	LDA	Aggregated	60	DSL	45184.17576	0.006504176
Riverside (SC)	2025	LDA	Aggregated	65	GAS	2552251.696	0.007000425
Riverside (SC)	2025	LDA	Aggregated	65	DSL	31455.37009	0.006949446
Riverside (SC)	2025	LDA	Aggregated	70	GAS	453731.2736	0.007478904
Riverside (SC)	2025	LDA	Aggregated	70	DSL	5592.036692	0.007259898
Riverside (SC)	2025	LDT1	Aggregated	5	GAS	3269.377841	0.116439985
Riverside (SC)	2025	LDT1	Aggregated	5	DSL	2.056723449	0.491641546
Riverside (SC)	2025	LDT1	Aggregated	10	GAS	1288.713929	0.076063911
Riverside (SC)	2025	LDT1	Aggregated	10	DSL	0.810713318	0.351869711
Riverside (SC)	2025	LDT1	Aggregated	15	GAS	4887.950956	0.051394977
Riverside (SC)	2025	LDT1	Aggregated	15	DSL	3.074946928	0.223357745
Riverside (SC)	2025	LDT1	Aggregated	20	GAS	13787.50733	0.037020921
Riverside (SC)	2025	LDT1	Aggregated	20	DSL	8.673543106	0.145231471
Riverside (SC)	2025	LDT1	Aggregated	25	GAS	89345.12811	0.027911014
Riverside (SC)	2025	LDT1	Aggregated	25	DSL	56.2058682	0.110708137
Riverside (SC)	2025	LDT1	Aggregated	30	GAS	186967.5511	0.022121672
Riverside (SC)	2025	LDT1	Aggregated	30	DSL	117.6188759	0.091173573
Riverside (SC)	2025	LDT1	Aggregated	35	GAS	212552.6077	0.018376015
Riverside (SC)	2025	LDT1	Aggregated	35	DSL	133.7141051	0.078717319
Riverside (SC)	2025	LDT1	Aggregated	40	GAS	172958.0069	0.015993127
Riverside (SC)	2025	LDT1	Aggregated	40	DSL	108.8056523	0.071112896
Riverside (SC)	2025	LDT1	Aggregated	45	GAS	144293.2622	0.014528574
Riverside (SC)	2025	LDT1	Aggregated	45	DSL	90.77303091	0.067172641
Riverside (SC)	2025	LDT1	Aggregated	50	GAS	196968.72	0.013979507
Riverside (SC)	2025	LDT1	Aggregated	50	DSL	123.9104823	0.066341994
Riverside (SC)	2025	LDT1	Aggregated	55	GAS	168917.5377	0.014052315
Riverside (SC)	2025	LDT1	Aggregated	55	DSL	106.2638451	0.068533423
Riverside (SC)	2025	LDT1	Aggregated	60	GAS	243871.9747	0.014895998
Riverside (SC)	2025	LDT1	Aggregated	60	DSL	153.4167151	0.074354939

Riverside (SC)	2025	LDT1	Aggregated	65	GAS	169773.6672	0.015945887
Riverside (SC)	2025	LDT1	Aggregated	65	DSL	106.8024252	0.084600597
Riverside (SC)	2025	LDT1	Aggregated	70	GAS	30181.82821	0.016873696
Riverside (SC)	2025	LDT1	Aggregated	70	DSL	18.986999	0.091744065
Riverside (SC)	2025	LDT2	Aggregated	5	GAS	17428.98698	0.07028709
Riverside (SC)	2025	LDT2	Aggregated	5	DSL	36.45099396	0.258778132
Riverside (SC)	2025	LDT2	Aggregated	10	GAS	6870.107824	0.044781077
Riverside (SC)	2025	LDT2	Aggregated	10	DSL	14.36814768	0.193575365
Riverside (SC)	2025	LDT2	Aggregated	15	GAS	26057.56743	0.029531425
Riverside (SC)	2025	LDT2	Aggregated	15	DSL	54.49681237	0.094978907
Riverside (SC)	2025	LDT2	Aggregated	20	GAS	73500.92203	0.020840992
Riverside (SC)	2025	LDT2	Aggregated	20	DSL	153.719873	0.037446649
Riverside (SC)	2025	LDT2	Aggregated	25	GAS	476297.0663	0.015446003
Riverside (SC)	2025	LDT2	Aggregated	25	DSL	996.127974	0.022687492
Riverside (SC)	2025	LDT2	Aggregated	30	GAS	996720.2239	0.012087173
Riverside (SC)	2025	LDT2	Aggregated	30	DSL	2084.541282	0.017204618
Riverside (SC)	2025	LDT2	Aggregated	35	GAS	1133113.642	0.009958849
Riverside (SC)	2025	LDT2	Aggregated	35	DSL	2369.794559	0.013735468
Riverside (SC)	2025	LDT2	Aggregated	40	GAS	922035.6278	0.008638427
Riverside (SC)	2025	LDT2	Aggregated	40	DSL	1928.345872	0.011377915
Riverside (SC)	2025	LDT2	Aggregated	45	GAS	769224.4548	0.007857526
Riverside (SC)	2025	LDT2	Aggregated	45	DSL	1608.756492	0.00969444
Riverside (SC)	2025	LDT2	Aggregated	50	GAS	1050036.252	0.007613756
Riverside (SC)	2025	LDT2	Aggregated	50	DSL	2196.046457	0.008450708
Riverside (SC)	2025	LDT2	Aggregated	55	GAS	900495.9682	0.007739349
Riverside (SC)	2025	LDT2	Aggregated	55	DSL	1883.297815	0.007512684
Riverside (SC)	2025	LDT2	Aggregated	60	GAS	1300076.552	0.008333682
Riverside (SC)	2025	LDT2	Aggregated	60	DSL	2718.980891	0.007163382
Riverside (SC)	2025	LDT2	Aggregated	65	GAS	905059.9774	0.00906379
Riverside (SC)	2025	LDT2	Aggregated	65	DSL	1892.842987	0.007254846
Riverside (SC)	2025	LDT2	Aggregated	70	GAS	160898.7142	0.009681378
Riverside (SC)	2025	LDT2	Aggregated	70	DSL	336.5036687	0.007318616
Riverside (SC)	2025	LHDT1	Aggregated	5	GAS	660.2943293	0.170756311
Riverside (SC)	2025	LHDT1	Aggregated	5	DSL	691.616314	0.782844768
Riverside (SC)	2025	LHDT1	Aggregated	10	GAS	177.5725676	0.111022068
Riverside (SC)	2025	LHDT1	Aggregated	10	DSL	165.3732471	0.570010977
Riverside (SC)	2025	LHDT1	Aggregated	15	GAS	552.5462001	0.075662317
Riverside (SC)	2025	LHDT1	Aggregated	15	DSL	478.5609181	0.329398659
Riverside (SC)	2025	LHDT1	Aggregated	20	GAS	1538.231781	0.054479323
Riverside (SC)	2025	LHDT1	Aggregated	20	DSL	1757.828369	0.185921784
Riverside (SC)	2025	LHDT1	Aggregated	25	GAS	5525.219994	0.041388403
Riverside (SC)	2025	LHDT1	Aggregated	25	DSL	5984.325092	0.134916703
Riverside (SC)	2025	LHDT1	Aggregated	30	GAS	13216.66911	0.033120609
Riverside (SC)	2025	LHDT1	Aggregated	30	DSL	14423.46225	0.109390511
Riverside (SC)	2025	LHDT1	Aggregated	35	GAS	16047.0849	0.027894396

Riverside (SC)	2025	LHDT1	Aggregated	35	DSL	17193.28806	0.093145089
Riverside (SC)	2025	LHDT1	Aggregated	40	GAS	15641.57873	0.024700015
Riverside (SC)	2025	LHDT1	Aggregated	40	DSL	18510.56621	0.082948812
Riverside (SC)	2025	LHDT1	Aggregated	45	GAS	18237.11695	0.023000151
Riverside (SC)	2025	LHDT1	Aggregated	45	DSL	20015.14048	0.077128645
Riverside (SC)	2025	LHDT1	Aggregated	50	GAS	35878.34144	0.022613691
Riverside (SC)	2025	LHDT1	Aggregated	50	DSL	35568.2528	0.07486847
Riverside (SC)	2025	LHDT1	Aggregated	55	GAS	38006.59972	0.023325817
Riverside (SC)	2025	LHDT1	Aggregated	55	DSL	38139.72939	0.075926657
Riverside (SC)	2025	LHDT1	Aggregated	60	GAS	53415.32296	0.025254315
Riverside (SC)	2025	LHDT1	Aggregated	60	DSL	67244.69477	0.081228318
Riverside (SC)	2025	LHDT1	Aggregated	65	GAS	38927.29231	0.028185446
Riverside (SC)	2025	LHDT1	Aggregated	65	DSL	94442.32741	0.091379995
Riverside (SC)	2025	LHDT1	Aggregated	70	GAS	9090.416735	0.030347094
Riverside (SC)	2025	LHDT1	Aggregated	70	DSL	26926.5215	0.098457937
Riverside (SC)	2025	LHDT2	Aggregated	5	GAS	154.8571892	0.058264631
Riverside (SC)	2025	LHDT2	Aggregated	5	DSL	296.8534923	0.74762093
Riverside (SC)	2025	LHDT2	Aggregated	10	GAS	41.64565329	0.037346853
Riverside (SC)	2025	LHDT2	Aggregated	10	DSL	70.98101209	0.551985263
Riverside (SC)	2025	LHDT2	Aggregated	15	GAS	129.5872881	0.025109558
Riverside (SC)	2025	LHDT2	Aggregated	15	DSL	205.4064905	0.294002377
Riverside (SC)	2025	LHDT2	Aggregated	20	GAS	360.7576794	0.017846199
Riverside (SC)	2025	LHDT2	Aggregated	20	DSL	754.4898517	0.142032568
Riverside (SC)	2025	LHDT2	Aggregated	25	GAS	1295.816124	0.013392913
Riverside (SC)	2025	LHDT2	Aggregated	25	DSL	2568.574174	0.096430926
Riverside (SC)	2025	LHDT2	Aggregated	30	GAS	3099.672583	0.010597045
Riverside (SC)	2025	LHDT2	Aggregated	30	DSL	6190.795465	0.076425111
Riverside (SC)	2025	LHDT2	Aggregated	35	GAS	3763.482971	0.008834155
Riverside (SC)	2025	LHDT2	Aggregated	35	DSL	7379.651843	0.063722965
Riverside (SC)	2025	LHDT2	Aggregated	40	GAS	3668.380615	0.007752369
Riverside (SC)	2025	LHDT2	Aggregated	40	DSL	7945.050042	0.055484034
Riverside (SC)	2025	LHDT2	Aggregated	45	GAS	4277.105747	0.007163339
Riverside (SC)	2025	LHDT2	Aggregated	45	DSL	8590.838924	0.050281466
Riverside (SC)	2025	LHDT2	Aggregated	50	GAS	8414.458317	0.006996988
Riverside (SC)	2025	LHDT2	Aggregated	50	DSL	15266.49943	0.047388297
Riverside (SC)	2025	LHDT2	Aggregated	55	GAS	8913.593446	0.007180823
Riverside (SC)	2025	LHDT2	Aggregated	55	DSL	16370.22094	0.046493642
Riverside (SC)	2025	LHDT2	Aggregated	60	GAS	12527.36304	0.007746714
Riverside (SC)	2025	LHDT2	Aggregated	60	DSL	28862.56741	0.048447268
Riverside (SC)	2025	LHDT2	Aggregated	65	GAS	9129.521192	0.008634572
Riverside (SC)	2025	LHDT2	Aggregated	65	DSL	40536.2542	0.053312913
Riverside (SC)	2025	LHDT2	Aggregated	70	GAS	2131.952861	0.009295809
Riverside (SC)	2025	LHDT2	Aggregated	70	DSL	11557.32128	0.056705334
Riverside (SC)	2025	MCY	Aggregated	5	GAS	353.1642683	12.54280716
Riverside (SC)	2025	MCY	Aggregated	10	GAS	139.2092728	8.130060217

Riverside (SC)	2025	MCY	Aggregated	15	GAS	528.0055432	5.603115886
Riverside (SC)	2025	MCY	Aggregated	20	GAS	1489.352157	4.045717132
Riverside (SC)	2025	MCY	Aggregated	25	GAS	9651.226726	3.081798884
Riverside (SC)	2025	MCY	Aggregated	30	GAS	20196.58223	2.468893736
Riverside (SC)	2025	MCY	Aggregated	35	GAS	22960.32757	2.082564382
Riverside (SC)	2025	MCY	Aggregated	40	GAS	18683.24523	1.848965555
Riverside (SC)	2025	MCY	Aggregated	45	GAS	15586.82625	1.730110156
Riverside (SC)	2025	MCY	Aggregated	50	GAS	21276.92707	1.692396739
Riverside (SC)	2025	MCY	Aggregated	55	GAS	18246.78624	1.745462222
Riverside (SC)	2025	MCY	Aggregated	60	GAS	26343.50378	1.886871382
Riverside (SC)	2025	MCY	Aggregated	65	GAS	18339.26694	2.19357536
Riverside (SC)	2025	MCY	Aggregated	70	GAS	3260.297156	2.403471606
Riverside (SC)	2025	MDV	Aggregated	5	GAS	9729.618745	0.141227446
Riverside (SC)	2025	MDV	Aggregated	5	DSL	216.0126518	0.154969308
Riverside (SC)	2025	MDV	Aggregated	10	GAS	3835.193058	0.090463825
Riverside (SC)	2025	MDV	Aggregated	10	DSL	85.14724412	0.115654378
Riverside (SC)	2025	MDV	Aggregated	15	GAS	14546.46773	0.059985241
Riverside (SC)	2025	MDV	Aggregated	15	DSL	322.9541824	0.057602267
Riverside (SC)	2025	MDV	Aggregated	20	GAS	41031.41219	0.042532627
Riverside (SC)	2025	MDV	Aggregated	20	DSL	910.9610956	0.023675185
Riverside (SC)	2025	MDV	Aggregated	25	GAS	265889.7428	0.031651596
Riverside (SC)	2025	MDV	Aggregated	25	DSL	5903.165367	0.014727259
Riverside (SC)	2025	MDV	Aggregated	30	GAS	556412.5893	0.024847804
Riverside (SC)	2025	MDV	Aggregated	30	DSL	12353.22391	0.011289973
Riverside (SC)	2025	MDV	Aggregated	35	GAS	632553.3287	0.020518482
Riverside (SC)	2025	MDV	Aggregated	35	DSL	14043.66661	0.009113493
Riverside (SC)	2025	MDV	Aggregated	40	GAS	514720.3988	0.017819623
Riverside (SC)	2025	MDV	Aggregated	40	DSL	11427.59251	0.00764893
Riverside (SC)	2025	MDV	Aggregated	45	GAS	429414.5543	0.016212442
Riverside (SC)	2025	MDV	Aggregated	45	DSL	9533.67023	0.006628261
Riverside (SC)	2025	MDV	Aggregated	50	GAS	586175.9159	0.015692215
Riverside (SC)	2025	MDV	Aggregated	50	DSL	13014.016	0.00590931
Riverside (SC)	2025	MDV	Aggregated	55	GAS	502696.0238	0.015920165
Riverside (SC)	2025	MDV	Aggregated	55	DSL	11160.6327	0.005414629
Riverside (SC)	2025	MDV	Aggregated	60	GAS	725759.2887	0.017092189
Riverside (SC)	2025	MDV	Aggregated	60	DSL	16112.98373	0.005314887
Riverside (SC)	2025	MDV	Aggregated	65	GAS	505243.8523	0.01854151
Riverside (SC)	2025	MDV	Aggregated	65	DSL	11217.19845	0.005539626
Riverside (SC)	2025	MDV	Aggregated	70	GAS	89820.66185	0.019772813
Riverside (SC)	2025	MDV	Aggregated	70	DSL	1994.158236	0.005696318
Riverside (SC)	2025	MH	Aggregated	5	GAS	77.64220504	0.352364527
Riverside (SC)	2025	MH	Aggregated	5	DSL	21.82657227	1.072227242
Riverside (SC)	2025	MH	Aggregated	10	GAS	21.18758996	0.230609535
Riverside (SC)	2025	MH	Aggregated	10	DSL	5.793045688	0.80757231
Riverside (SC)	2025	MH	Aggregated	15	GAS	64.08732897	0.157995843

Riverside (SC)	2025	MH	Aggregated	15	DSL	15.91630082	0.407121987
Riverside (SC)	2025	MH	Aggregated	20	GAS	170.9290771	0.114707894
Riverside (SC)	2025	MH	Aggregated	20	DSL	47.31064942	0.178484388
Riverside (SC)	2025	MH	Aggregated	25	GAS	632.6303197	0.08762566
Riverside (SC)	2025	MH	Aggregated	25	DSL	172.9568477	0.124449809
Riverside (SC)	2025	MH	Aggregated	30	GAS	1523.182908	0.070508305
Riverside (SC)	2025	MH	Aggregated	30	DSL	421.5397522	0.101003692
Riverside (SC)	2025	MH	Aggregated	35	GAS	1894.431138	0.05966347
Riverside (SC)	2025	MH	Aggregated	35	DSL	527.0658556	0.083560468
Riverside (SC)	2025	MH	Aggregated	40	GAS	1775.457846	0.053080837
Riverside (SC)	2025	MH	Aggregated	40	DSL	507.4779657	0.070843843
Riverside (SC)	2025	MH	Aggregated	45	GAS	2007.76205	0.049525709
Riverside (SC)	2025	MH	Aggregated	45	DSL	531.8940132	0.062236221
Riverside (SC)	2025	MH	Aggregated	50	GAS	4084.20692	0.048834887
Riverside (SC)	2025	MH	Aggregated	50	DSL	1074.907921	0.057405769
Riverside (SC)	2025	MH	Aggregated	55	GAS	4677.338187	0.050523131
Riverside (SC)	2025	MH	Aggregated	55	DSL	1305.317677	0.056159717
Riverside (SC)	2025	MH	Aggregated	60	GAS	6824.398003	0.054917177
Riverside (SC)	2025	MH	Aggregated	60	DSL	2147.260351	0.05889963
Riverside (SC)	2025	MH	Aggregated	65	GAS	3855.703216	0.06149327
Riverside (SC)	2025	MH	Aggregated	65	DSL	1561.237054	0.065401216
Riverside (SC)	2025	MH	Aggregated	70	GAS	780.5124995	0.065999899
Riverside (SC)	2025	MH	Aggregated	70	DSL	363.0173374	0.075083982
Riverside (SC)	2025	MHDT	Aggregated	5	GAS	135.5180525	0.182800253
Riverside (SC)	2025	MHDT	Aggregated	5	DSL	1802.483544	0.246749443
Riverside (SC)	2025	MHDT	Aggregated	10	GAS	36.98118734	0.115513993
Riverside (SC)	2025	MHDT	Aggregated	10	DSL	478.4017111	0.199710436
Riverside (SC)	2025	MHDT	Aggregated	15	GAS	111.8591365	0.076624841
Riverside (SC)	2025	MHDT	Aggregated	15	DSL	1314.401086	0.140270204
Riverside (SC)	2025	MHDT	Aggregated	20	GAS	298.3425785	0.053851232
Riverside (SC)	2025	MHDT	Aggregated	20	DSL	3907.011416	0.101188704
Riverside (SC)	2025	MHDT	Aggregated	25	GAS	1104.203942	0.039902294
Riverside (SC)	2025	MHDT	Aggregated	25	DSL	14283.1347	0.074150083
Riverside (SC)	2025	MHDT	Aggregated	30	GAS	2658.58989	0.031204423
Riverside (SC)	2025	MHDT	Aggregated	30	DSL	34811.6258	0.054675712
Riverside (SC)	2025	MHDT	Aggregated	35	GAS	3306.572995	0.025730736
Riverside (SC)	2025	MHDT	Aggregated	35	DSL	43526.18998	0.040321294
Riverside (SC)	2025	MHDT	Aggregated	40	GAS	3098.914946	0.022372746
Riverside (SC)	2025	MHDT	Aggregated	40	DSL	41908.58147	0.029743592
Riverside (SC)	2025	MHDT	Aggregated	45	GAS	3504.382737	0.020481104
Riverside (SC)	2025	MHDT	Aggregated	45	DSL	43924.90923	0.021952703
Riverside (SC)	2025	MHDT	Aggregated	50	GAS	7128.645659	0.019847043
Riverside (SC)	2025	MHDT	Aggregated	50	DSL	88768.12239	0.0162191
Riverside (SC)	2025	MHDT	Aggregated	55	GAS	8163.90727	0.020259479
Riverside (SC)	2025	MHDT	Aggregated	55	DSL	107795.8373	0.012005128

Riverside (SC)	2025	MHDT	Aggregated	60	GAS	11911.42274	0.021806858
Riverside (SC)	2025	MHDT	Aggregated	60	DSL	177325.2071	0.010339931
Riverside (SC)	2025	MHDT	Aggregated	65	GAS	6729.811328	0.024423028
Riverside (SC)	2025	MHDT	Aggregated	65	DSL	128930.1894	0.010339931
Riverside (SC)	2025	MHDT	Aggregated	70	GAS	1362.320066	0.026290362
Riverside (SC)	2025	MHDT	Aggregated	70	DSL	29978.72358	0.010339931
Riverside (SC)	2025	MHDT	Aggregated	75	DSL	0	0
Riverside (SC)	2025	OBUS	Aggregated	5	GAS	73.360752	0.149522381
Riverside (SC)	2025	OBUS	Aggregated	5	DSL	53.35870561	0.364459782
Riverside (SC)	2025	OBUS	Aggregated	10	GAS	20.0192348	0.094513645
Riverside (SC)	2025	OBUS	Aggregated	10	DSL	13.85721364	0.291383265
Riverside (SC)	2025	OBUS	Aggregated	15	GAS	60.55333752	0.062709164
Riverside (SC)	2025	OBUS	Aggregated	15	DSL	39.89842374	0.210890378
Riverside (SC)	2025	OBUS	Aggregated	20	GAS	161.5034713	0.044084209
Riverside (SC)	2025	OBUS	Aggregated	20	DSL	119.6071399	0.153285931
Riverside (SC)	2025	OBUS	Aggregated	25	GAS	597.7449504	0.032674128
Riverside (SC)	2025	OBUS	Aggregated	25	DSL	436.9010113	0.112284127
Riverside (SC)	2025	OBUS	Aggregated	30	GAS	1439.189465	0.025558776
Riverside (SC)	2025	OBUS	Aggregated	30	DSL	1059.561535	0.082516804
Riverside (SC)	2025	OBUS	Aggregated	35	GAS	1789.965816	0.021080659
Riverside (SC)	2025	OBUS	Aggregated	35	DSL	1322.418448	0.060747579
Riverside (SC)	2025	OBUS	Aggregated	40	GAS	1677.553113	0.018333626
Riverside (SC)	2025	OBUS	Aggregated	40	DSL	1281.021856	0.044918362
Riverside (SC)	2025	OBUS	Aggregated	45	GAS	1897.047279	0.016786194
Riverside (SC)	2025	OBUS	Aggregated	45	DSL	1367.543388	0.033436018
Riverside (SC)	2025	OBUS	Aggregated	50	GAS	3858.989976	0.016269896
Riverside (SC)	2025	OBUS	Aggregated	50	DSL	2680.971985	0.024229811
Riverside (SC)	2025	OBUS	Aggregated	55	GAS	4419.413985	0.016610535
Riverside (SC)	2025	OBUS	Aggregated	55	DSL	3233.803995	0.017787411
Riverside (SC)	2025	OBUS	Aggregated	60	GAS	6448.077681	0.017881315
Riverside (SC)	2025	OBUS	Aggregated	60	DSL	5345.462815	0.015311684
Riverside (SC)	2025	OBUS	Aggregated	65	GAS	3643.086737	0.020022243
Riverside (SC)	2025	OBUS	Aggregated	65	DSL	4502.906107	0.016500569
Riverside (SC)	2025	OBUS	Aggregated	70	GAS	737.472408	0.021549035
Riverside (SC)	2025	OBUS	Aggregated	70	DSL	1116.858709	0.01696945
Riverside (SC)	2025	OBUS	Aggregated	75	DSL	0	0
Riverside (SC)	2025	SBUS	Aggregated	5	GAS	127.9078756	0.167172116
Riverside (SC)	2025	SBUS	Aggregated	5	DSL	315.2544697	0.586097596
Riverside (SC)	2025	SBUS	Aggregated	10	GAS	448.3105482	0.10538395
Riverside (SC)	2025	SBUS	Aggregated	10	DSL	1104.950758	0.455911782
Riverside (SC)	2025	SBUS	Aggregated	15	GAS	896.6210965	0.069951351
Riverside (SC)	2025	SBUS	Aggregated	15	DSL	2209.901516	0.270735509
Riverside (SC)	2025	SBUS	Aggregated	20	GAS	1217.01731	0.048993663
Riverside (SC)	2025	SBUS	Aggregated	20	DSL	2999.581886	0.160533667
Riverside (SC)	2025	SBUS	Aggregated	25	GAS	1921.14361	0.03618183

Riverside (SC)	2025	SBUS	Aggregated	25	DSL	4735.041583	0.116786382
Riverside (SC)	2025	SBUS	Aggregated	30	GAS	2304.867237	0.028189523
Riverside (SC)	2025	SBUS	Aggregated	30	DSL	5680.804992	0.088954502
Riverside (SC)	2025	SBUS	Aggregated	35	GAS	2365.656257	0.02313403
Riverside (SC)	2025	SBUS	Aggregated	35	DSL	5830.631657	0.068138759
Riverside (SC)	2025	SBUS	Aggregated	40	GAS	1596.943036	0.020040493
Riverside (SC)	2025	SBUS	Aggregated	40	DSL	3935.984611	0.052979956
Riverside (SC)	2025	SBUS	Aggregated	45	GAS	766.1748282	0.018325995
Riverside (SC)	2025	SBUS	Aggregated	45	DSL	1888.390671	0.042467842
Riverside (SC)	2025	SBUS	Aggregated	50	GAS	383.7236269	0.017729584
Riverside (SC)	2025	SBUS	Aggregated	50	DSL	945.7634091	0.035847108
Riverside (SC)	2025	SBUS	Aggregated	55	GAS	571.1480973	0.017866743
Riverside (SC)	2025	SBUS	Aggregated	55	DSL	1407.708397	0.032548108
Riverside (SC)	2025	SBUS	Aggregated	60	GAS	317.8707386	0.019241139
Riverside (SC)	2025	SBUS	Aggregated	60	DSL	783.4558321	0.032056764
Riverside (SC)	2025	SBUS	Aggregated	65	DSL	0	0
Riverside (SC)	2025	SBUS	Aggregated	70	DSL	0	0
Riverside (SC)	2025	SBUS	Aggregated	75	DSL	0	0
Riverside (SC)	2025	UBUS	Aggregated	5	GAS	277.4761292	1.175839151
Riverside (SC)	2025	UBUS	Aggregated	5	DSL	247.3406616	1.56819724
Riverside (SC)	2025	UBUS	Aggregated	10	GAS	862.1905862	0.779915174
Riverside (SC)	2025	UBUS	Aggregated	10	DSL	768.5518414	1.20000718
Riverside (SC)	2025	UBUS	Aggregated	15	GAS	1507.409983	0.544755166
Riverside (SC)	2025	UBUS	Aggregated	15	DSL	1343.696785	0.6326857
Riverside (SC)	2025	UBUS	Aggregated	20	GAS	14252.81936	0.400377341
Riverside (SC)	2025	UBUS	Aggregated	20	DSL	12704.88305	0.29077574
Riverside (SC)	2025	UBUS	Aggregated	25	GAS	64.33597739	0.310640908
Riverside (SC)	2025	UBUS	Aggregated	25	DSL	57.34872855	0.20443436
Riverside (SC)	2025	UBUS	Aggregated	30	GAS	153.9429756	0.252629004
Riverside (SC)	2025	UBUS	Aggregated	30	DSL	137.223903	0.166009403
Riverside (SC)	2025	UBUS	Aggregated	35	GAS	187.6023617	0.215732981
Riverside (SC)	2025	UBUS	Aggregated	35	DSL	167.2276906	0.136631917
Riverside (SC)	2025	UBUS	Aggregated	40	GAS	183.0850434	0.193378868
Riverside (SC)	2025	UBUS	Aggregated	40	DSL	163.2009784	0.115965964
Riverside (SC)	2025	UBUS	Aggregated	45	GAS	211.927046	0.181532406
Riverside (SC)	2025	UBUS	Aggregated	45	DSL	188.9105774	0.10384895
Riverside (SC)	2025	UBUS	Aggregated	50	GAS	412.3546748	0.180249362
Riverside (SC)	2025	UBUS	Aggregated	50	DSL	367.5706389	0.100193498
Riverside (SC)	2025	UBUS	Aggregated	55	GAS	444.4138142	0.187258537
Riverside (SC)	2025	UBUS	Aggregated	55	DSL	396.1479756	0.104948837
Riverside (SC)	2025	UBUS	Aggregated	60	GAS	643.4676649	0.203959035
Riverside (SC)	2025	UBUS	Aggregated	60	DSL	573.583459	0.118220955
Riverside (SC)	2025	UBUS	Aggregated	65	GAS	515.7546775	0.227052821
Riverside (SC)	2025	UBUS	Aggregated	65	DSL	459.74082	0.139950739
Riverside (SC)	2025	UBUS	Aggregated	70	GAS	125.6373587	0.244346427

| Riverside (SC) | 2025 | UBUS | Aggregated | 70 | DSL | 111.9924353 | 0.169627009 |

TOG_RUNEX	CO_RUNEX	NOx_RUNEX	CO2_RUNEX	PM10_RUNEX	PM2_5_RUNEX
3.274958751	53.2713191	5.193086113	3929.696616	0.006492705	0.005969803
3.851545827	12.30995191	16.93836055	3664.593356	0.01246525	0.011926009
2.063467495	48.52798471	4.502974453	3333.407842	0.004086281	0.003757184
7.794371062	23.15705633	9.849317413	4560.229723	0.011194838	0.010710554
1.364792822	44.1249923	4.004078833	2404.623016	0.002713106	0.002494601
2.568115703	8.307744107	8.131126702	2876.131853	0.009118528	0.008724064
0.956363991	40.40590735	3.591834417	1942.77983	0.001900381	0.001747331
0.340342423	1.518037549	4.181298233	1927.345585	0.006166263	0.005899513
0.706620642	37.08572365	3.275547221	1827.710835	0.001404259	0.001291164
0.396254007	1.624509929	3.280319809	1821.591215	0.007391074	0.007071339
0.551079995	34.15203357	3.03249983	1740.175352	0.001094667	0.001006506
0.218750469	0.977212692	2.196881664	1671.480135	0.006835628	0.006539921
0.453247519	31.52854817	2.854334676	1668.966939	0.000900215	0.000827715
0.210244205	0.862212909	1.668658515	1631.112682	0.006308846	0.006035928
0.393173021	29.18153793	2.731439314	1608.581111	0.000780975	0.000718077
0.136854605	0.580587921	1.278926026	1543.633725	0.005915887	0.005659968
0.359188676	27.04028936	2.6631828	1573.203287	0.000714745	0.000657182
0.0909618	0.397881429	1.015540576	1472.767097	0.005577418	0.005336141
0.347449413	25.21772194	2.620878361	1553.666273	0.000690062	0.000634487
0.048668202	0.240741581	0.782054577	1391.290354	0.005286722	0.005058021
0.354166117	23.560876	2.626756178	1524.412251	0.000702823	0.000646219
0.032587265	0.168333451	0.64394804	1346.228137	0.005020763	0.004803567
0.380820863	22.07759938	2.676100961	1503.078488	0.00075513	0.000694314
0.02802939	0.144663097	0.595729406	1329.341707	0.004900801	0.004688794
0.42629157	20.48784431	2.841735882	1498.979183	0.000855888	0.000786957
0.02802939	0.144663097	0.599083186	1329.341707	0.004900801	0.004688794
0.458853818	19.70674764	2.960577107	1494.879878	0.000929654	0.000854782
0.02802939	0.144663097	0.600013091	1329.341707	0.004900801	0.004688794
0	0	0	0	0	0
0.079439966	0.962290714	0.069709849	791.0229036	0.011798523	0.010848306
0.170149432	3.078101354	0.104396696	577.3003149	0.015734128	0.015053477
0.05056669	0.879766658	0.059859145	588.9783368	0.00743358	0.006834903
0.12657279	2.30183836	0.090225948	480.9456544	0.012217	0.011688498
0.033309036	0.787364352	0.053336468	449.6948618	0.004940546	0.00454265
0.06435314	1.135528425	0.066916649	395.5764321	0.009599869	0.009184583
0.023487738	0.72158202	0.047697936	359.7474528	0.003463644	0.003184693

0.027908006	0.454780544	0.050969929	324.5011166	0.007705164	0.007371842
0.017394771	0.660194004	0.043515663	298.0222789	0.002561215	0.002354943
0.017916124	0.279011619	0.044084699	272.0103533	0.00636261	0.006087366
0.013604866	0.607579501	0.040268447	256.5945999	0.001997513	0.00183664
0.01390662	0.213333084	0.040866735	235.6108783	0.00547085	0.005234183
0.01120534	0.560479131	0.03792198	229.2048838	0.001643042	0.001510716
0.011365438	0.172006882	0.039028531	212.987488	0.004863522	0.004653129
0.009718122	0.518131062	0.036330892	212.3907126	0.001425315	0.001310525
0.009676684	0.144321565	0.037990413	199.308629	0.004453912	0.004261237
0.008839513	0.477495684	0.035508284	203.7051429	0.001303986	0.001198967
0.008536872	0.125129318	0.037464068	192.5168245	0.004193672	0.004012256
0.008568525	0.448360373	0.034938583	204.2575013	0.00125817	0.001156841
0.007787073	0.111766417	0.037234358	193.0068915	0.00405833	0.003882769
0.008714205	0.42001328	0.035151714	211.9688458	0.00128033	0.001177216
0.007346572	0.102866047	0.037263262	201.9665138	0.00404093	0.003866121
0.009390404	0.397566052	0.035798545	229.0545874	0.001374163	0.001263492
0.007404572	0.102148513	0.037808815	218.955954	0.00419846	0.004016836
0.010215004	0.355684808	0.038476717	249.8175307	0.001555652	0.001430365
0.007911483	0.108550435	0.038905436	246.150806	0.00454908	0.004352289
0.010913199	0.338815589	0.039979854	265.3092412	0.001688657	0.001552658
0.008264911	0.113031437	0.039437609	265.8039466	0.004793539	0.004586173
0.169908953	1.996750665	0.171687209	916.5476404	0.014604746	0.013428525
0.559701214	3.011116517	0.420244097	730.821862	0.251622323	0.240737252
0.11099228	1.778466662	0.143643604	682.3263233	0.009304983	0.008555589
0.400580272	2.204213254	0.418298934	615.1813801	0.176638338	0.168997041
0.07499543	1.564150797	0.125651294	521.1570424	0.006249699	0.005746368
0.254277943	1.316252811	0.406384939	510.0867513	0.129493452	0.123891623
0.054020841	1.412005965	0.110790437	416.8936368	0.004422815	0.004066615
0.165336375	0.787463791	0.40326786	419.0752089	0.099165377	0.094875526
0.040727687	1.278423833	0.100169534	345.3795723	0.003296243	0.003030774
0.126033853	0.597513437	0.411470732	351.3794558	0.079357863	0.075924877
0.032279891	1.16816596	0.092261869	297.364915	0.002586047	0.002377775
0.103795051	0.504736864	0.424264638	303.8437892	0.066431458	0.063557663
0.026814238	1.07369281	0.086851675	265.6245301	0.002135065	0.001963113
0.089614434	0.450596968	0.438998823	274.2306973	0.058129048	0.055614411
0.023337134	0.992356234	0.083525309	246.1453974	0.001854621	0.001705255
0.080957304	0.4239005	0.454944103	255.9451392	0.053145933	0.050846864
0.021200061	0.918027676	0.082314443	236.1148547	0.001694887	0.001558386
0.076471586	0.419964278	0.471800061	246.7745351	0.050759881	0.048564031
0.020398864	0.866976036	0.081956716	236.7143932	0.001629678	0.001498429
0.075525949	0.438388359	0.488696488	247.1844834	0.050647827	0.048456824
0.020505105	0.820732968	0.083860956	245.6399232	0.001649039	0.001516231
0.078020745	0.482680057	0.506268453	258.4515141	0.052808105	0.05052365
0.021736205	0.78822838	0.087280372	265.3894792	0.001756596	0.001615125
0.084648155	0.563611077	0.524294108	279.9558969	0.057615855	0.055123419

0.023268201	0.725178712	0.096775554	289.7510107	0.001970654	0.001811944
0.096312155	0.696173288	0.544913191	314.4534747	0.065777687	0.062932173
0.024622058	0.702258946	0.102350441	307.8443267	0.002128541	0.001957115
0.104444519	0.788959717	0.555003664	339.2652367	0.071468272	0.068376586
0.102562757	1.178342955	0.097255536	1021.098098	0.011843223	0.010889406
0.294601698	2.434974117	0.15154299	728.0383558	0.010529687	0.010074178
0.065344442	1.075936641	0.083234567	760.2042034	0.007462102	0.006861128
0.220372683	1.822321957	0.126552159	612.8383177	0.009407416	0.009000455
0.043092185	0.962555319	0.074001067	580.5655649	0.004959732	0.004560291
0.108127171	0.892132559	0.086144179	508.1439665	0.008003727	0.00765749
0.030411127	0.881530481	0.06605869	464.4255043	0.003477243	0.003197197
0.04263052	0.349516899	0.058095797	417.4790628	0.006737561	0.006446097
0.022538772	0.806213603	0.060196558	384.7514654	0.002571368	0.002364278
0.025828201	0.211010899	0.045219418	350.0411449	0.005729805	0.005481936
0.017637574	0.741726745	0.055667214	331.2648569	0.002005493	0.001843976
0.019586313	0.15990799	0.038482503	302.686529	0.005045294	0.004827037
0.014531929	0.684119405	0.052414967	295.9055294	0.001649642	0.001516785
0.015636917	0.127626366	0.034038393	273.1862255	0.004546182	0.004349517
0.012605173	0.632430147	0.050233079	274.2031534	0.00143106	0.001315807
0.012953	0.105713965	0.030916921	254.9703122	0.004169044	0.003988693
0.011465684	0.58299376	0.0491409	263.0153877	0.001309246	0.001203803
0.011036475	0.090087995	0.028630562	245.8346365	0.00387818	0.003710412
0.011109975	0.547446534	0.048413828	263.6991594	0.001263238	0.001161501
0.009620569	0.078575325	0.026867352	246.2430234	0.003652719	0.003494704
0.01129324	0.513013606	0.048804412	273.646543	0.001285468	0.001181941
0.008552691	0.069949865	0.025508872	257.467141	0.003480807	0.003330229
0.012160489	0.485770224	0.049829985	295.6675092	0.001379647	0.001268535
0.008155034	0.066941349	0.025030821	278.8896193	0.003435824	0.003287191
0.013225862	0.435507958	0.053781261	322.6890301	0.001561816	0.001436032
0.00825916	0.068229201	0.025322606	313.255805	0.003502568	0.003351049
0.014127044	0.415286097	0.056014125	342.7901572	0.00169532	0.001558785
0.008331758	0.069130628	0.025457438	337.9730656	0.003549104	0.003395571
0.249167208	1.832124145	0.427942397	1367.074976	0.007854898	0.007222288
0.891216721	3.404902907	2.035660845	1222.32264	0.078216777	0.074833154
0.162003141	1.485525591	0.374702793	1344.632114	0.004972749	0.00457226
0.6489196	2.497084428	2.070117586	1027.552897	0.057664324	0.055169791
0.110406275	1.243038525	0.337153331	934.0986402	0.003321291	0.003053805
0.374998474	1.468466655	2.078793609	671.0780292	0.043787706	0.041893469
0.0794961	1.073897521	0.307418527	811.003369	0.002340078	0.002151616
0.21165959	0.857224082	2.119903333	571.9926826	0.034364299	0.032877715
0.06039386	0.951806522	0.2839205	743.4197549	0.001739087	0.001599026
0.153593696	0.644178697	2.187677721	507.3030339	0.027962536	0.026752889
0.048329516	0.86144148	0.266322286	674.7002818	0.001363114	0.001253333
0.124533825	0.542035517	2.270886593	460.6859984	0.023748023	0.022720694
0.040703438	0.794420224	0.253761459	674.7002818	0.001126728	0.001035985

0.106039491	0.482145183	2.359771484	460.6859984	0.0209598	0.020053089
0.036042204	0.745963243	0.24585583	672.1645566	0.000982056	0.000902964
0.094431708	0.451919948	2.455824402	448.074149	0.019180229	0.0183505
0.033561766	0.714626268	0.241674924	669.0777794	0.000902487	0.000829803
0.087805835	0.44602998	2.552038128	437.0610754	0.018177313	0.017390971
0.032997845	0.703419683	0.239351131	705.5920951	0.000874371	0.000803951
0.085232776	0.463809121	2.646218524	458.2001185	0.017840578	0.017068803
0.034036977	0.711122502	0.241322652	743.4197549	0.000893031	0.000821109
0.086437451	0.508753572	2.744390689	478.8028635	0.018153389	0.017368082
0.036851038	0.744096135	0.247433572	754.3782322	0.00096145	0.000884018
0.09247304	0.592352058	2.850847236	483.5150422	0.019311236	0.018475841
0.041128137	0.799858915	0.265918974	764.6603193	0.001091082	0.00100321
0.104030049	0.73000231	2.971213658	489.8098259	0.021472548	0.020543655
0.044282408	0.846131776	0.276689062	757.4465427	0.00118548	0.001090005
0.112087815	0.826350095	3.026487383	484.2438051	0.022979455	0.021985374
0.085019613	0.532529677	0.184440071	1419.840497	0.006679756	0.006141789
0.851116723	3.212776816	1.205515157	1261.433417	0.049005174	0.046885232
0.05449644	0.452259212	0.160411773	1473.733739	0.004208381	0.003869451
0.628398524	2.379087935	1.183887662	1121.075288	0.038253572	0.03659874
0.036639808	0.391913067	0.143294462	1036.711194	0.00279712	0.002571849
0.33470216	1.286613411	1.126601382	746.2661084	0.030159575	0.028854885
0.026041132	0.347054433	0.129674479	907.2982832	0.001961286	0.00180333
0.161694636	0.643775186	1.103972234	636.5100898	0.024258667	0.023209247
0.019542907	0.312482113	0.118853033	820.4292986	0.001450753	0.001333913
0.109780198	0.451427933	1.116792386	567.23008	0.020059182	0.01919143
0.015463183	0.285041564	0.110657537	741.5418661	0.001132028	0.001040858
0.087004908	0.368794762	1.146409428	511.5510538	0.017267282	0.016520307
0.012890778	0.26299462	0.10469918	741.5418661	0.000931803	0.000856758
0.072544359	0.318891707	1.182216241	511.5510538	0.015360454	0.014695968
0.011312238	0.245276815	0.10079442	724.6033043	0.000809065	0.000743905
0.063164884	0.290185791	1.223529194	492.8667782	0.014067728	0.013459164
0.010452727	0.231566407	0.098543433	707.5261841	0.000741011	0.000681332
0.057242106	0.277478014	1.266123049	473.7660328	0.013237976	0.012665307
0.010209989	0.222655447	0.097181827	737.6201301	0.000715879	0.000658224
0.053948426	0.279076893	1.308522934	491.2156332	0.012794233	0.01224076
0.010478241	0.217689039	0.097692397	771.2035407	0.000729491	0.00067074
0.05292992	0.295946986	1.35347132	508.43184	0.012713649	0.012163663
0.011303987	0.217818936	0.100010952	779.2739727	0.000784077	0.00072093
0.055153993	0.33549189	1.40382717	510.2038005	0.013179523	0.012609383
0.012599547	0.221345545	0.107454259	786.9423885	0.000888899	0.00081731
0.060693207	0.404515109	1.462024796	511.5510538	0.014243912	0.013627726
0.013564422	0.226712709	0.111855803	771.2035407	0.000965564	0.0008878
0.064555252	0.452827657	1.488705324	505.350435	0.014986024	0.014337735
15.63925377	46.2476896	1.566111326	561.092638	0.01187211	0.011079764
10.13198339	35.15690146	1.404556047	416.1795253	0.007676715	0.007165117

6.977796463	28.47770181	1.305940881	320.3922033	0.00523477	0.004886399
5.035727509	23.77161517	1.219041303	255.998997	0.003762899	0.003512812
3.833970785	20.61113644	1.159369389	212.3000736	0.002850241	0.002661046
3.070129038	18.41823326	1.116022161	182.7342735	0.002274108	0.002123327
2.58868402	16.97580477	1.0892535	163.2464701	0.001910555	0.001784008
2.297491501	16.1366397	1.076619942	151.3645256	0.00168961	0.001577798
2.149046829	15.87033691	1.079646137	145.6664982	0.001572412	0.001468437
2.101845194	16.04349525	1.082631306	145.4959238	0.001539541	0.001437805
2.167363599	16.95472138	1.101346173	150.8337479	0.001585519	0.001480796
2.342803813	18.68681511	1.125198143	162.293562	0.001717256	0.001603873
2.722273224	22.48551029	1.20502522	181.2425263	0.001955839	0.001826731
2.982251554	25.12236579	1.245616706	194.2221197	0.002126951	0.001986555
0.206063101	1.949287233	0.202532603	1436.003325	0.011537088	0.010607965
0.176422254	3.317817978	0.101885394	900.927072	0.010970745	0.010496156
0.131993734	1.770353325	0.17202511	1069.048879	0.00728674	0.006699915
0.13166482	2.482455967	0.086185239	765.1063857	0.009045185	0.008653894
0.087522394	1.578594316	0.15212022	816.5131562	0.004854319	0.004463386
0.065576351	1.21810559	0.060656043	648.8615945	0.00736913	0.007050345
0.062057455	1.441969057	0.135274796	653.1627883	0.003410454	0.003135801
0.026952624	0.480433284	0.043019746	538.876985	0.006048811	0.005787142
0.046181099	1.316593525	0.122989915	541.1172936	0.002526479	0.002323016
0.016766006	0.291489057	0.035080891	455.6759403	0.005065956	0.004846805
0.036253822	1.210062349	0.113628369	465.8916052	0.00197323	0.001814322
0.012852884	0.221508729	0.031066345	393.5621062	0.004406645	0.004216016
0.029936997	1.115673697	0.107023805	416.1627392	0.001624626	0.001493792
0.010375106	0.17735499	0.028521041	357.1031875	0.003943539	0.003772944
0.025999133	1.031651473	0.102725802	385.6434117	0.001409975	0.001296428
0.008707799	0.14750258	0.026824791	334.0209121	0.003613868	0.003457534
0.023654086	0.951994017	0.100772918	369.9244437	0.001289856	0.001185983
0.007545835	0.126392734	0.025667021	321.4468938	0.003382492	0.003236167
0.022894977	0.895307152	0.099668988	370.8681339	0.001243807	0.001143642
0.006727356	0.111091408	0.024837908	323.0576555	0.003230424	0.003090677
0.023227455	0.841217041	0.101009554	384.8532546	0.001264373	0.001162552
0.006164195	0.09998726	0.024273595	340.938683	0.003149735	0.003013479
0.024937361	0.799629795	0.103837094	415.8010365	0.001355043	0.001245921
0.006050646	0.096887029	0.0242687	369.1679879	0.003195235	0.003057011
0.027051689	0.722195807	0.113108552	453.9367868	0.001531249	0.001407937
0.006306496	0.100187553	0.024788882	414.5239066	0.003367886	0.003222193
0.028848046	0.691956905	0.118433018	482.2690934	0.001660515	0.001526793
0.006484879	0.102497742	0.025038455	446.2418971	0.003488262	0.003337361
0.514169491	4.825477603	0.648956229	3840.596785	0.008691994	0.007991967
1.220659429	2.436961722	14.42287036	2071.867786	0.284196587	0.271902368
0.336504892	3.764315779	0.575031224	3278.576817	0.005536839	0.00509092
0.919367384	1.933435746	12.06411765	1881.264855	0.245783909	0.235151406
0.230547163	3.050146991	0.523461576	2259.928983	0.003720879	0.003421211

0.463481315	1.15188155	8.424596135	1544.681523	0.182206022	0.174323871
0.16738149	2.579573957	0.480988293	1588.919342	0.002637468	0.002425055
0.203192609	0.670991028	6.170700585	1267.594897	0.136291429	0.130395522
0.127863157	2.250900724	0.449382719	1387.463951	0.001971516	0.001812736
0.141677834	0.518189355	5.305197505	1136.981104	0.116498266	0.111458603
0.102885553	2.021673852	0.425938542	1275.022804	0.001553802	0.001428664
0.114985988	0.443440524	4.823357771	1067.228692	0.1065849	0.101974084
0.087060795	1.863470545	0.409871249	1177.155218	0.001290892	0.001186928
0.095128038	0.387138715	4.470904276	1009.342839	0.101798393	0.097394639
0.077455433	1.762746866	0.400101458	1095.169327	0.001130317	0.001039285
0.080651005	0.345681167	4.212526324	963.3235431	0.102038829	0.097624675
0.072267799	1.711004666	0.396847254	1017.577403	0.00104292	0.000958926
0.0708518	0.317324517	4.031362176	929.1708051	0.107249783	0.102610205
0.071259753	1.72142996	0.395672526	951.8961587	0.001013851	0.000932199
0.065352652	0.301132055	3.909933788	906.8846249	0.117396733	0.112318203
0.073723235	1.794069018	0.400182549	925.6592253	0.001038275	0.000954656
0.063934104	0.296559624	3.850671434	896.4650025	0.132457252	0.12672721
0.080135016	1.952355818	0.409603887	931.4101836	0.001120002	0.001029801
0.067053313	0.304740774	3.870167406	897.9119379	0.152564504	0.145964631
0.089730835	2.196632696	0.435799982	948.676377	0.001272508	0.001170024
0.074454937	0.325042368	3.975966051	911.2254312	0.177678757	0.169992453
0.096306898	2.370425816	0.453821748	978.4428331	0.001383006	0.001271623
0.085478122	0.355825773	4.119335959	936.4054822	0.207640357	0.198657927
0.2667417	1.379858639	0.394661477	3723.283496	0.007064025	0.006495111
0.280905458	1.285657583	9.761059829	2163.880289	0.006657733	0.006369723
0.168557748	1.236802848	0.342659033	3178.430759	0.00444699	0.004088843
0.227355129	1.041365654	7.470483966	1918.866938	0.005947178	0.005689906
0.111810788	1.112778596	0.305127049	2190.898123	0.002953368	0.002715513
0.15968695	0.733418552	4.595054549	1609.789232	0.005011707	0.004794902
0.078579591	1.012156611	0.274123075	1540.384866	0.002069208	0.00190256
0.115195636	0.530556189	2.697344406	1405.975854	0.004388977	0.004199111
0.058225334	0.925259367	0.250370598	1345.083048	0.001529398	0.001406225
0.084414225	0.388936303	1.56580742	1297.465882	0.003966796	0.003795194
0.045533421	0.850425676	0.232149267	1236.076482	0.001192509	0.001096468
0.062244136	0.286757865	1.034840504	1226.657036	0.003641798	0.003484255
0.03754623	0.785003788	0.21883211	1141.198319	0.000980902	0.000901903
0.045902724	0.211446213	0.741673429	1170.36753	0.003375871	0.003229832
0.032646258	0.727782306	0.209693039	1061.716735	0.000851152	0.000782603
0.033860815	0.155940685	0.563028754	1123.976106	0.003154713	0.003018241
0.029885979	0.676879595	0.204692445	986.4949026	0.000779117	0.000716369
0.024991481	0.115038123	0.44635344	1084.728282	0.002969436	0.00284098
0.028960759	0.635254695	0.201628321	922.8199305	0.00075233	0.00069174
0.018464211	0.084904223	0.365407836	1050.859167	0.002814151	0.002692412
0.029562585	0.59944055	0.202212099	897.3844196	0.00076634	0.000704621
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0.035638025	0.541815125	0.218842021	919.6984988	0.000933377	0.000858206
0.011771225	0.053922345	0.285968053	1009.842619	0.002628733	0.002515015
0.038362835	0.5296267	0.227969687	948.555721	0.001013836	0.000932184
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0.414909718	2.032662491	13.48566345	2475.500355	0.008113056	0.007762089
0.137914088	0.979304563	0.282780844	3177.070561	0.004307517	0.003960603
0.331717667	1.621731726	10.22436013	2182.768297	0.00723739	0.006924304
0.091505065	0.880207079	0.25181392	2189.960536	0.002860556	0.002630176
0.240082642	1.178847966	6.439793228	1853.11344	0.006329918	0.006056089
0.064327574	0.800118418	0.226231655	1539.725663	0.002004053	0.001842652
0.174504364	0.857480739	3.807608627	1622.222629	0.005664664	0.005419613
0.047678011	0.731149839	0.206633394	1344.507425	0.001481148	0.001361861
0.127826932	0.628072755	2.20966569	1496.911061	0.005151691	0.004928831
0.037295306	0.671896139	0.191598995	1235.547508	0.001154817	0.001061812
0.0939391	0.461366842	1.452245136	1415.63476	0.004734884	0.004530055
0.030760849	0.620201771	0.180611582	1140.709947	0.000949844	0.000873347
0.069156494	0.339597362	1.033603923	1352.115481	0.004392728	0.004202701
0.026752384	0.57508308	0.173071988	1061.262378	0.00082416	0.000757785
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0.024494375	0.535037759	0.168948497	986.0727357	0.000754375	0.00069362
0.038064361	0.187308218	0.614455305	1264.34228	0.003882132	0.003714193
0.023740994	0.502438513	0.166420398	922.4250131	0.00072841	0.000669746
0.027583795	0.135380821	0.49155889	1217.652402	0.003614655	0.003458287
0.024238053	0.474551315	0.166903196	897.0003872	0.00074195	0.000682196
0.020249614	0.099324844	0.406233772	1182.957692	0.003403503	0.003256269
0.026092373	0.452158218	0.170096402	902.5732932	0.000797226	0.00073302
0.017431186	0.085537576	0.373137555	1169.478391	0.003315457	0.003172031
0.02921641	0.430337896	0.180638699	919.3049172	0.000903639	0.000830863
0.018784642	0.09322482	0.38937203	1209.059885	0.00348265	0.003331992
0.031444301	0.42115559	0.188179056	948.1497901	0.00098153	0.000902481
0.019318427	0.096256565	0.395771836	1224.670291	0.003548589	0.003395079
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0.243937159	1.228083375	0.400990716	1830.848908	0.003466469	0.00318729
0.667227499	1.34445592	13.825737	2245.038143	0.076998608	0.073667682
0.153776012	1.120485943	0.347140697	1562.928659	0.002181094	0.002005435
0.519020859	1.099840722	11.15723546	2005.523353	0.064489504	0.061699716
0.102072848	1.023191355	0.306506494	1077.329577	0.001447758	0.00133116
0.308211769	0.768558717	7.554085242	1674.121623	0.044670074	0.042737667
0.071491438	0.937055453	0.274883213	757.452918	0.001013802	0.000932154
0.18275536	0.547855445	5.451970849	1438.665306	0.031084836	0.02974012
0.052796442	0.860047777	0.250760177	661.4172229	0.000748937	0.00068862

0.132952406	0.413490363	4.589365026	1314.455471	0.0254222	0.024322447
0.041134086	0.791526364	0.232426882	607.8154617	0.000583674	0.000536667
0.101267929	0.32023569	4.167158378	1238.106464	0.022185503	0.021225768
0.033757123	0.729340508	0.219569665	561.1610552	0.000479878	0.00044123
0.077570791	0.250124351	3.89954823	1177.071782	0.020025499	0.019159205
0.02924304	0.674248116	0.210521546	522.0776037	0.000416224	0.000382702
0.060313647	0.197957272	3.721316054	1127.60771	0.018918268	0.018099872
0.026741249	0.625377603	0.204855366	485.0887978	0.000380852	0.00035018
0.048346405	0.159913742	3.605429164	1087.493375	0.018852615	0.018037059
0.025870968	0.583231143	0.201438138	453.7779257	0.000367639	0.000338031
0.040809204	0.133191433	3.536550226	1055.313446	0.019825707	0.018968056
0.02607111	0.538693208	0.206260739	441.2705308	0.000374388	0.000344236
0.037053544	0.115741132	3.522231189	1030.117266	0.021840902	0.020896074
0.028076625	0.505205199	0.209358565	444.0120671	0.000402213	0.00036982
0.036494186	0.109904577	3.520728728	1019.804986	0.023218979	0.022214537
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
1.715781729	7.577506007	1.568314028	3776.127851	0.007395971	0.006800323
13.50781292	39.99737763	11.88164289	3087.282727	0.170596414	0.163216488
1.138050391	6.215256829	1.391798714	3223.542049	0.004712003	0.004332513
10.16877367	30.86049773	9.947015706	2803.265985	0.144384816	0.138138793
0.79490546	5.274895977	1.256515533	2221.993418	0.00316706	0.002911995
5.088906247	16.78263491	7.08035897	2301.724374	0.101517267	0.097125675
0.584229676	4.597787768	1.153651114	1562.247462	0.002245243	0.002064418
2.139986905	8.2993014	5.551692696	1888.838591	0.071390581	0.068302257
0.453286484	4.105505603	1.070912888	1364.173737	0.001678567	0.001543381
1.409058205	5.793332673	5.12422572	1694.211448	0.058925088	0.056376015
0.368635649	3.725757605	1.013718654	1253.620047	0.001323101	0.001216543
1.100455946	4.656550707	4.88874077	1590.273631	0.051280946	0.049062555
0.314797059	3.436347593	0.974584376	1157.395283	0.001099363	0.001010824
0.883527948	3.842924458	4.71621846	1504.018129	0.045276788	0.043318134
0.28217799	3.220938662	0.950765965	1076.785622	0.000962721	0.000885186
0.734386586	3.241727425	4.59979074	1435.444942	0.040904587	0.039135072
0.264891661	3.068168085	0.942680579	1000.49617	0.000888369	0.000816822
0.641472513	2.799379028	4.53687634	1384.554071	0.038159811	0.036509034
0.263019446	2.999915228	0.937855438	935.9174623	0.000863679	0.000794121
0.59857476	2.487090074	4.519924721	1351.345514	0.037039687	0.035437366
0.273247218	3.003572052	0.948427016	910.1209466	0.000884542	0.000813304
0.602085178	2.288136151	4.555078637	1335.819272	0.037542414	0.035918346
0.297616545	3.105709136	0.971749908	915.7753683	0.000954213	0.000877364
0.659521539	2.237359817	4.644074903	1337.975345	0.039678688	0.037962205
0.331314944	3.285861902	1.039733525	932.7517283	0.001084175	0.000996859
0.766685407	2.315301267	4.80247233	1357.813734	0.043445317	0.041565892
0.356549733	3.4481703	1.07716085	962.0185195	0.001178327	0.001083428

0.910322704	2.480734163	4.99484863	1395.334437	0.048852836	0.046739484

Aggregate E
Speed
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75

Calculated		
CO RUNEX*VMT	VMT	CO_RUNEX
979.4934512	18.38688187	53.2713191
76330.78588	6200.737943	12.30995191
243.4916321	5.017550874	48.52798471
121546.5151	5248.789543	23.15705633
669.6795531	15.17687637	44.1249923
45082.95662	5426.61835	8.307744107
1635.577157	40.47866424	40.40590735
103680.7015	68299.16796	1.518037549
5556.060742	149.8167002	37.08572365
67924.80452	41812.48961	1.624509929
12319.09633	360.7134055	34.15203357
94956.49725	97170.75721	0.977212692
14144.67656	448.6307611	31.52854817
107168.2275	124294.3899	0.862212909
12269.55373	420.456035	29.18153793
69719.94252	120085.0724	0.580587921
12856.82702	475.4692839	27.04028936
52304.41312	131457.2868	0.397881429
24390.67467	967.203728	25.21772194
56896.5305	236338.6097	0.240741581
26097.5916	1107.666438	23.560876
47020.96945	279332.2968	0.168333451
35680.12939	1616.1236	22.07759938
67488.31832	466520.6244	0.144663097
18707.25593	913.0904965	20.48784431
73293.61851	506650.4178	0.144663097
3642.54598	184.8375007	19.70674764
19787.50396	136783.3564	0.144663097
0	0	0
47296.01836	49149.40743	0.962290714
1864.543415	605.7446461	3.078101354
17044.22241	19373.57168	0.879766658
549.6115052	238.7706777	2.30183836
57856.97981	73481.83805	0.787364352
1028.369812	905.6310607	1.135528425
149563.1594	207271.1838	0.72158202

1161.748454	2554.525404	0.454780544
886738.6189	1343148.549	0.660194004
4618.677452	16553.71011	0.279011619
1707743.04	2810731.825	0.607579501
7390.076261	34641.02303	0.213333084
1790931.831	3195358.635	0.560479131
6773.868001	39381.37786	0.172006882
1347204.338	2600122.703	0.518131062
4624.836352	32045.35902	0.144321565
1035782.75	2169198.14	0.477495684
3345.257843	26734.40492	0.125129318
1327631.831	2961081.998	0.448360373
4078.80609	36494.02223	0.111766417
1066573.861	2539381.278	0.42001328
3219.372734	31296.7479	0.102866047
1457553.011	3666190.825	0.397566052
4615.496348	45184.17576	0.102148513
907797.1533	2552251.696	0.355684808
3414.494102	31455.37009	0.108550435
153731.2289	453731.2736	0.338815589
632.0759412	5592.036692	0.113031437
6528.132379	3269.377841	1.996750665
6.193033948	2.056723449	3.011116517
2291.934759	1288.713929	1.778466662
1.78698504	0.810713318	2.204213254
7645.492384	4887.950956	1.564150797
4.047407537	3.074946928	1.316252811
19468.04259	13787.50733	1.412005965
6.830101133	8.673543106	0.787463791
114220.9412	89345.12811	1.278423833
33.58376148	56.2058682	0.597513437
218409.1289	186967.5511	1.16816596
59.36658253	117.6188759	0.504736864
228216.2067	212552.6077	1.07369281
60.25117041	133.7141051	0.450596968
171635.9565	172958.0069	0.992356234
46.12277043	108.8056523	0.4239005
132465.2081	144293.2622	0.918027676
38.12143036	90.77303091	0.419964278
170767.16	196968.72	0.866976036
54.32091294	123.9104823	0.438388359
138636.1921	168917.5377	0.820732968
51.29143886	106.2638451	0.482680057
192226.8117	243871.9747	0.78822838
86.46736006	153.4167151	0.563611077

123116.2494	169773.6672	0.725178712
74.35299549	106.8024252	0.696173288
21195.45887	30181.82821	0.702258946
14.97997737	18.986999	0.788959717
20537.32403	17428.98698	1.178342955
88.75722685	36.45099396	2.434974117
7391.800734	6870.107824	1.075936641
26.183391	14.36814768	1.822321957
25081.85013	26057.56743	0.962555319
48.61838067	54.49681237	0.892132559
64793.30314	73500.92203	0.881530481
53.72769329	153.719873	0.349516899
383997.1741	476297.0663	0.806213603
210.1938597	996.127974	0.211010899
739294.0474	996720.2239	0.741726745
333.3348074	2084.541282	0.15990799
775185.03	1133113.642	0.684119405
302.4482681	2369.794559	0.127626366
583123.1277	922035.6278	0.632430147
203.8530884	1928.345872	0.105713965
448453.057	769224.4548	0.58299376
144.9296469	1608.756492	0.090087995
574838.7071	1050036.252	0.547446534
172.5550631	2196.046457	0.078575325
461966.6834	900495.9682	0.513013606
131.7364272	1883.297815	0.069949865
631538.478	1300076.552	0.485770224
182.0122476	2718.980891	0.066941349
394160.8222	905059.9774	0.435507958
129.1471645	1892.842987	0.068229201
66818.99907	160898.7142	0.415286097
23.26271009	336.5036687	0.069130628
1209.741183	660.2943293	1.832124145
2354.886398	691.616314	3.404902907
263.7885934	177.5725676	1.485525591
412.9509602	165.3732471	2.497084428
686.8362136	552.5462001	1.243038525
702.7507508	478.5609181	1.468466655
1651.903295	1538.231781	1.073897521
1506.852809	1757.828369	0.857224082
5258.940426	5525.219994	0.951806522
3854.974737	5984.325092	0.644178697
11385.38699	13216.66911	0.86144148
7818.028813	14423.46225	0.542035517
12748.12878	16047.0849	0.794420224

8289.661023	17193.28806	0.482145183
11668.04279	15641.57873	0.745963243
8365.294121	18510.56621	0.451919948
13032.72281	18237.11695	0.714626268
8927.352712	20015.14048	0.44602998
25237.53157	35878.34144	0.703419683
16496.88008	35568.2528	0.463809121
27027.34829	38006.59972	0.711122502
19403.72355	38139.72939	0.508753572
39746.13536	53415.32296	0.744096135
39832.53334	67244.69477	0.592352058
31136.34179	38927.29231	0.799858915
68943.11714	94442.32741	0.73000231
7691.690457	9090.416735	0.846131776
22250.73359	26926.5215	0.826350095
82.46604891	154.8571892	0.532529677
953.724018	296.8534923	3.212776816
18.83463033	41.64565329	0.452259212
168.8700695	70.98101209	2.379087935
50.78695152	129.5872881	0.391913067
264.2787454	205.4064905	1.286613411
125.2025519	360.7576794	0.347054433
485.7218448	754.4898517	0.643775186
404.9193598	1295.816124	0.312482113
1159.52613	2568.574174	0.451427933
883.5355203	3099.672583	0.285041564
2283.132937	6190.795465	0.368794762
989.7757727	3763.482971	0.26299462
2353.309773	7379.651843	0.318891707
899.7687142	3668.380615	0.245276815
2305.540631	7945.050042	0.290185791
990.4340093	4277.105747	0.231566407
2383.768926	8590.838924	0.277478014
1873.524982	8414.458317	0.222655447
4260.52722	15266.49943	0.279076893
1940.391595	8913.593446	0.217689039
4844.717553	16370.22094	0.295946986
2728.696888	12527.36304	0.217818936
9683.157281	28862.56741	0.33549189
2020.778848	9129.521192	0.221345545
16397.5273	40536.2542	0.404515109
483.3408078	2131.952861	0.226712709
5233.474717	11557.32128	0.452827657
16333.03146	353.1642683	46.2476896
4894.166686	139.2092728	35.15690146

15036.38441	528.0055432	28.47770181
35404.30633	1489.352157	23.77161517
198922.7509	9651.226726	20.61113644
371985.3624	20196.58223	18.41823326
389770.0383	22960.32757	16.97580477
301484.7967	18683.24523	16.1366397
247368.1841	15586.82625	15.87033691
341356.2783	21276.92707	16.04349525
309369.1767	18246.78624	16.95472138
492276.1845	26343.50378	18.68681511
412367.7756	18339.26694	22.48551029
81906.37774	3260.297156	25.12236579
18965.8216	9729.618745	1.949287233
716.6906595	216.0126518	3.317817978
6789.646781	3835.193058	1.770353325
211.3742843	85.14724412	2.482455967
22962.97126	14546.46773	1.578594316
393.3922949	322.9541824	1.21810559
59166.02674	41031.41219	1.441969057
437.6560303	910.9610956	0.480433284
350068.7136	265889.7428	1.316593525
1720.708105	5903.165367	0.291489057
673293.9247	556412.5893	1.210062349
2736.346926	12353.22391	0.221508729
705723.1106	632553.3287	1.115673697
2490.714345	14043.66661	0.17735499
531012.0575	514720.3988	1.031651473
1685.599382	11427.59251	0.14750258
408800.0866	429414.5543	0.951994017
1204.986646	9533.67023	0.126392734
524807.4896	586175.9159	0.895307152
1445.745357	13014.016	0.111091408
422876.4614	502696.0238	0.841217041
1115.921085	11160.6327	0.09998726
580338.7511	725759.2887	0.799629795
1561.139128	16112.98373	0.096887029
364884.9918	505243.8523	0.722195807
1123.823662	11217.19845	0.100187553
62152.02715	89820.66185	0.691956905
204.3967163	1994.158236	0.102497742
374.6607215	77.64220504	4.825477603
53.19052114	21.82657227	2.436961722
79.75677923	21.18758996	3.764315779
11.20048161	5.793045688	1.933435746
195.4757736	64.08732897	3.050146991

18.33369325	15.91630082	1.15188155
440.9241957	170.9290771	2.579573957
31.74502128	47.31064942	0.670991028
1423.988045	632.6303197	2.250900724
89.62439729	172.9568477	0.518189355
3079.379056	1523.182908	2.021673852
186.9278084	421.5397522	0.443440524
3530.216626	1894.431138	1.863470545
204.0475982	527.0658556	0.387138715
3129.682753	1775.457846	1.762746866
175.4255754	507.4779657	0.345681167
3435.290236	2007.76205	1.711004666
168.7830109	531.8940132	0.317324517
7030.676154	4084.20692	1.72142996
323.6892311	1074.907921	0.301132055
8391.467531	4677.338187	1.794069018
387.1045197	1305.317677	0.296559624
13323.65315	6824.398003	1.952355818
654.3577809	2147.260351	0.304740774
8469.563749	3855.703216	2.196632696
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1850.146978	780.5124995	2.370425816
129.1709247	363.0173374	0.355825773
186.9957555	135.5180525	1.379858639
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45.73843783	36.98118734	1.236802848
498.1911108	478.4017111	1.041365654
124.4744529	111.8591365	1.112778596
964.0061418	1314.401086	0.733418552
301.9694132	298.3425785	1.012156611
2072.889088	3907.011416	0.530556189
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2260.933103	2658.58989	0.850425676
9982.507506	34811.6258	0.286757865
2595.672327	3306.572995	0.785003788
9203.448019	43526.18998	0.211446213
2255.335466	3098.914946	0.727782306
6535.252897	41908.58147	0.155940685
2372.045168	3504.382737	0.676879595
5053.039125	43924.90923	0.115038123
4528.505627	7128.645659	0.635254695
7536.788444	88768.12239	0.084904223
4893.777063	8163.90727	0.59944055
6760.247264	107795.8373	0.062713435

6793.707452	11911.42274	0.570352308
9561.791066	177325.2071	0.053922345
3646.313563	6729.811328	0.541815125
6952.218209	128930.1894	0.053922345
721.5210807	1362.320066	0.5296267
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0	0	0
80.26964201	73.360752	1.094176925
108.4602395	53.35870561	2.032662491
19.60492799	20.0192348	0.979304563
22.47268299	13.85721364	1.621731726
53.29947632	60.55333752	0.880207079
47.03417569	39.89842374	1.178847966
129.221902	161.5034713	0.800118418
102.5608187	119.6071399	0.857480739
437.0411245	597.7449504	0.731149839
274.4056219	436.9010113	0.628072755
966.9858453	1439.189465	0.671896139
488.8465592	1059.561535	0.461366842
1110.13997	1789.965816	0.620201771
449.0898159	1322.418448	0.339597362
964.7324118	1677.553113	0.57508308
321.8441085	1281.021856	0.251240139
1014.991924	1897.047279	0.535037759
256.152115	1367.543388	0.187308218
1938.905187	3858.989976	0.502438513
362.9521875	2680.971985	0.135380821
2097.238719	4419.413985	0.474551315
321.1970786	3233.803995	0.099324844
2915.551312	6448.077681	0.452158218
457.2379334	5345.462815	0.085537576
1567.75828	3643.086737	0.430337896
419.7826113	4502.906107	0.09322482
310.5906272	737.472408	0.42115559
107.5049828	1116.858709	0.096256565
0	0	0
157.0815355	127.9078756	1.228083375
423.8457381	315.2544697	1.34445592
502.3256673	448.3105482	1.120485943
1215.26984	1104.950758	1.099840722
917.4149543	896.6210965	1.023191355
1698.439074	2209.901516	0.768558717
1140.412707	1217.01731	0.937055453
1643.337267	2999.581886	0.547855445
1652.275292	1921.14361	0.860047777

1957.894064	4735.041583	0.413490363
1824.363183	2304.867237	0.791526364
1819.196504	5680.804992	0.32023569
1725.368935	2365.656257	0.729340508
1458.38296	5830.631657	0.250124351
1076.735833	1596.943036	0.674248116
779.1567779	3935.984611	0.197957272
479.1485774	766.1748282	0.625377603
301.9796182	1888.390671	0.159913742
223.7995695	383.7236269	0.583231143
125.9675842	945.7634091	0.133191433
307.6736007	571.1480973	0.538693208
162.9297628	1407.708397	0.115741132
160.5899499	317.8707386	0.505205199
86.10538204	783.4558321	0.109904577
0	0	0
0	0	0
0	0	0
2102.577036	277.4761292	7.577506007
9892.977845	247.3406616	39.99737763
5358.735929	862.1905862	6.215256829
23717.89236	768.5518414	30.86049773
7951.430855	1507.409983	5.274895977
22550.77256	1343.696785	16.78263491
65531.43851	14252.81936	4.597787768
105441.6537	12704.88305	8.2993014
264.1317156	64.33597739	4.105505603
332.2402629	57.34872855	5.793332673
573.5542119	153.9429756	3.725757605
638.9900623	137.223903	4.656550707
644.6669242	187.6023617	3.436347593
642.6433821	167.2276906	3.842924458
589.7056948	183.0850434	3.220938662
529.0530877	163.2009784	3.241727425
650.227799	211.927046	3.068168085
528.8323084	188.9105774	2.799379028
1237.029068	412.3546748	2.999915228
914.1812876	367.5706389	2.487090074
1334.828912	444.4138142	3.003572052
906.440504	396.1479756	2.288136151
1998.423406	643.4676649	3.105709136
1283.312583	573.583459	2.237359817
1694.698646	515.7546775	3.285861902
1064.438503	459.74082	2.315301267
433.2190091	125.6373587	3.4481703

277.8234602	111.9924353	2.480734163

Aggregate Emission Factors by Speed.

CO RUNEX*VMT	VMT	CO_RUNEX
209945.0448	91945.73539	2.283358156
193326.3668	41315.51584	4.679267893
212036.0759	135160.2278	1.568775662
615976.9122	449338.2177	1.370853598
2037699.093	2289182.606	0.89014266
3872711.99	4804877.777	0.805995942
4066710.955	5482511.385	0.741760604
3062605.755	4496429.41	0.681119501
2382358.59	3805026.742	0.626108238
3098531.056	5309506.432	0.58358175
2555838.343	4688469.68	0.545132744
3592772.052	6868918.604	0.523047696
2441889.692	5036138.007	0.484873466
451214.5968	967085.4013	0.466571614
0	0	N/A

EMFAC2014 (v1.0.7) Emission Rates
Region Type: Sub-Area
Region: Riverside (SC)
Calendar Year: 2035
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, g/mile for RUNEX, PMBW and PMTW

Region	CalYr	VehClass	MdlYr	Speed	Fuel	VMT	ROG_RUNEX
Riverside (SC)	2035	HHDT	Aggregated	5	GAS	22.84688091	2.078189458
Riverside (SC)	2035	HHDT	Aggregated	5	DSL	7404.245148	0.489912838
Riverside (SC)	2035	HHDT	Aggregated	10	GAS	6.890009811	1.304183328
Riverside (SC)	2035	HHDT	Aggregated	10	DSL	6394.948884	0.292115293
Riverside (SC)	2035	HHDT	Aggregated	15	GAS	17.81218699	0.862834696
Riverside (SC)	2035	HHDT	Aggregated	15	DSL	7786.551994	0.274046047
Riverside (SC)	2035	HHDT	Aggregated	20	GAS	50.3520665	0.606703324
Riverside (SC)	2035	HHDT	Aggregated	20	DSL	85321.24507	0.198844073
Riverside (SC)	2035	HHDT	Aggregated	25	GAS	204.5889178	0.447919696
Riverside (SC)	2035	HHDT	Aggregated	25	DSL	56517.65858	0.164668763
Riverside (SC)	2035	HHDT	Aggregated	30	GAS	464.8514472	0.349120335
Riverside (SC)	2035	HHDT	Aggregated	30	DSL	127447.5426	0.123093818
Riverside (SC)	2035	HHDT	Aggregated	35	GAS	544.1834222	0.28723171
Riverside (SC)	2035	HHDT	Aggregated	35	DSL	150924.1446	0.089426024
Riverside (SC)	2035	HHDT	Aggregated	40	GAS	525.7189376	0.248861074
Riverside (SC)	2035	HHDT	Aggregated	40	DSL	152619.4793	0.066475747
Riverside (SC)	2035	HHDT	Aggregated	45	GAS	761.8193784	0.227663928
Riverside (SC)	2035	HHDT	Aggregated	45	DSL	195812.8076	0.04936456
Riverside (SC)	2035	HHDT	Aggregated	50	GAS	1229.294103	0.219822703
Riverside (SC)	2035	HHDT	Aggregated	50	DSL	319616.8756	0.036735451
Riverside (SC)	2035	HHDT	Aggregated	55	GAS	1347.24519	0.224279248
Riverside (SC)	2035	HHDT	Aggregated	55	DSL	357887.8844	0.027152807
Riverside (SC)	2035	HHDT	Aggregated	60	GAS	1760.475065	0.24080334
Riverside (SC)	2035	HHDT	Aggregated	60	DSL	554429.8852	0.023320705
Riverside (SC)	2035	HHDT	Aggregated	65	GAS	859.2669603	0.269446734
Riverside (SC)	2035	HHDT	Aggregated	65	DSL	515283.0777	0.023320705
Riverside (SC)	2035	HHDT	Aggregated	70	GAS	240.9519237	0.291060331
Riverside (SC)	2035	HHDT	Aggregated	70	DSL	170716.3701	0.023320705
Riverside (SC)	2035	HHDT	Aggregated	75	DSL	0	0
Riverside (SC)	2035	LDA	Aggregated	5	GAS	59440.28679	0.03085048
Riverside (SC)	2035	LDA	Aggregated	5	DSL	811.8574226	0.088729343
Riverside (SC)	2035	LDA	Aggregated	10	GAS	25248.8731	0.019448337
Riverside (SC)	2035	LDA	Aggregated	10	DSL	344.8584479	0.066403755
Riverside (SC)	2035	LDA	Aggregated	15	GAS	84240.36873	0.012760853
Riverside (SC)	2035	LDA	Aggregated	15	DSL	1150.586115	0.032482469
Riverside (SC)	2035	LDA	Aggregated	20	GAS	266313.5436	0.009022632

Riverside (SC)	2035	LDA	Aggregated	20	DSL	3637.408882	0.012695098
Riverside (SC)	2035	LDA	Aggregated	25	GAS	1603428.397	0.006655556
Riverside (SC)	2035	LDA	Aggregated	25	DSL	21900.21811	0.007647154
Riverside (SC)	2035	LDA	Aggregated	30	GAS	3325981.397	0.005191263
Riverside (SC)	2035	LDA	Aggregated	30	DSL	45427.48413	0.005784985
Riverside (SC)	2035	LDA	Aggregated	35	GAS	3582503.494	0.004273517
Riverside (SC)	2035	LDA	Aggregated	35	DSL	48931.15781	0.004606932
Riverside (SC)	2035	LDA	Aggregated	40	GAS	2926718.87	0.003695473
Riverside (SC)	2035	LDA	Aggregated	40	DSL	39974.20886	0.003804676
Riverside (SC)	2035	LDA	Aggregated	45	GAS	2893322.772	0.003376036
Riverside (SC)	2035	LDA	Aggregated	45	DSL	39518.07259	0.003228897
Riverside (SC)	2035	LDA	Aggregated	50	GAS	3441257.079	0.003259154
Riverside (SC)	2035	LDA	Aggregated	50	DSL	47001.96203	0.002799459
Riverside (SC)	2035	LDA	Aggregated	55	GAS	2913684.536	0.003340255
Riverside (SC)	2035	LDA	Aggregated	55	DSL	39796.1811	0.00247008
Riverside (SC)	2035	LDA	Aggregated	60	GAS	3608319.845	0.003586838
Riverside (SC)	2035	LDA	Aggregated	60	DSL	49283.76708	0.00233766
Riverside (SC)	2035	LDA	Aggregated	65	GAS	2564217.741	0.003925203
Riverside (SC)	2035	LDA	Aggregated	65	DSL	35023.03435	0.002349372
Riverside (SC)	2035	LDA	Aggregated	70	GAS	560058.8435	0.004222161
Riverside (SC)	2035	LDA	Aggregated	70	DSL	7649.490837	0.002357538
Riverside (SC)	2035	LDT1	Aggregated	5	GAS	3941.333173	0.043707559
Riverside (SC)	2035	LDT1	Aggregated	5	DSL	2.137813377	0.262767131
Riverside (SC)	2035	LDT1	Aggregated	10	GAS	1674.188106	0.027758501
Riverside (SC)	2035	LDT1	Aggregated	10	DSL	0.908094183	0.196450171
Riverside (SC)	2035	LDT1	Aggregated	15	GAS	5585.763087	0.018347732
Riverside (SC)	2035	LDT1	Aggregated	15	DSL	3.029766458	0.096737527
Riverside (SC)	2035	LDT1	Aggregated	20	GAS	17658.56897	0.013051136
Riverside (SC)	2035	LDT1	Aggregated	20	DSL	9.578161323	0.038532421
Riverside (SC)	2035	LDT1	Aggregated	25	GAS	106319.2301	0.009677924
Riverside (SC)	2035	LDT1	Aggregated	25	DSL	57.6684747	0.023501256
Riverside (SC)	2035	LDT1	Aggregated	30	GAS	220537.3076	0.007577921
Riverside (SC)	2035	LDT1	Aggregated	30	DSL	119.6213529	0.017871279
Riverside (SC)	2035	LDT1	Aggregated	35	GAS	237546.6309	0.006252767
Riverside (SC)	2035	LDT1	Aggregated	35	DSL	128.8473577	0.014308393
Riverside (SC)	2035	LDT1	Aggregated	40	GAS	194063.2321	0.005411293
Riverside (SC)	2035	LDT1	Aggregated	40	DSL	105.2615842	0.011893046
Riverside (SC)	2035	LDT1	Aggregated	45	GAS	191848.8224	0.004938885
Riverside (SC)	2035	LDT1	Aggregated	45	DSL	104.0604691	0.010178529
Riverside (SC)	2035	LDT1	Aggregated	50	GAS	228180.9429	0.004755383
Riverside (SC)	2035	LDT1	Aggregated	50	DSL	123.7673271	0.008926142
Riverside (SC)	2035	LDT1	Aggregated	55	GAS	193198.9588	0.004852805
Riverside (SC)	2035	LDT1	Aggregated	55	DSL	104.7927948	0.008000934
Riverside (SC)	2035	LDT1	Aggregated	60	GAS	239258.447	0.005183019
Riverside (SC)	2035	LDT1	Aggregated	60	DSL	129.7758616	0.007690761

Riverside (SC)	2035	LDT1	Aggregated	65	GAS	170026.7107	0.00564112
Riverside (SC)	2035	LDT1	Aggregated	65	DSL	92.223966	0.007852768
Riverside (SC)	2035	LDT1	Aggregated	70	GAS	37136.06744	0.00604834
Riverside (SC)	2035	LDT1	Aggregated	70	DSL	20.14292582	0.007965723
Riverside (SC)	2035	LDT2	Aggregated	5	GAS	22408.19554	0.03905407
Riverside (SC)	2035	LDT2	Aggregated	5	DSL	48.99418576	0.260820155
Riverside (SC)	2035	LDT2	Aggregated	10	GAS	9518.488493	0.024630454
Riverside (SC)	2035	LDT2	Aggregated	10	DSL	20.81160852	0.195242919
Riverside (SC)	2035	LDT2	Aggregated	15	GAS	31757.49575	0.016170829
Riverside (SC)	2035	LDT2	Aggregated	15	DSL	69.43587417	0.095350325
Riverside (SC)	2035	LDT2	Aggregated	20	GAS	100396.6549	0.011436462
Riverside (SC)	2035	LDT2	Aggregated	20	DSL	219.5113101	0.037089401
Riverside (SC)	2035	LDT2	Aggregated	25	GAS	604471.1254	0.00843905
Riverside (SC)	2035	LDT2	Aggregated	25	DSL	1321.640136	0.022270897
Riverside (SC)	2035	LDT2	Aggregated	30	GAS	1253850.638	0.006583886
Riverside (SC)	2035	LDT2	Aggregated	30	DSL	2741.469788	0.016825088
Riverside (SC)	2035	LDT2	Aggregated	35	GAS	1350556.048	0.00542064
Riverside (SC)	2035	LDT2	Aggregated	35	DSL	2952.910411	0.013380239
Riverside (SC)	2035	LDT2	Aggregated	40	GAS	1103333.989	0.00468786
Riverside (SC)	2035	LDT2	Aggregated	40	DSL	2412.374094	0.011031619
Riverside (SC)	2035	LDT2	Aggregated	45	GAS	1090744.106	0.004282475
Riverside (SC)	2035	LDT2	Aggregated	45	DSL	2384.847062	0.009341395
Riverside (SC)	2035	LDT2	Aggregated	50	GAS	1297308.033	0.004133523
Riverside (SC)	2035	LDT2	Aggregated	50	DSL	2836.486795	0.00807435
Riverside (SC)	2035	LDT2	Aggregated	55	GAS	1098420.219	0.004234887
Riverside (SC)	2035	LDT2	Aggregated	55	DSL	2401.630428	0.007093916
Riverside (SC)	2035	LDT2	Aggregated	60	GAS	1360288.468	0.004546025
Riverside (SC)	2035	LDT2	Aggregated	60	DSL	2974.189768	0.006684721
Riverside (SC)	2035	LDT2	Aggregated	65	GAS	966675.8971	0.004975573
Riverside (SC)	2035	LDT2	Aggregated	65	DSL	2113.57931	0.00668817
Riverside (SC)	2035	LDT2	Aggregated	70	GAS	211134.7162	0.005351654
Riverside (SC)	2035	LDT2	Aggregated	70	DSL	461.6334896	0.006690575
Riverside (SC)	2035	LHDT1	Aggregated	5	GAS	487.4346488	0.051283845
Riverside (SC)	2035	LHDT1	Aggregated	5	DSL	627.6219558	0.76181489
Riverside (SC)	2035	LHDT1	Aggregated	10	GAS	141.2680581	0.032195335
Riverside (SC)	2035	LHDT1	Aggregated	10	DSL	163.2981167	0.565644504
Riverside (SC)	2035	LHDT1	Aggregated	15	GAS	441.0977737	0.021264222
Riverside (SC)	2035	LHDT1	Aggregated	15	DSL	766.1467263	0.291000953
Riverside (SC)	2035	LHDT1	Aggregated	20	GAS	1123.069464	0.01497225
Riverside (SC)	2035	LHDT1	Aggregated	20	DSL	1469.712142	0.129909878
Riverside (SC)	2035	LHDT1	Aggregated	25	GAS	4526.112811	0.011048899
Riverside (SC)	2035	LHDT1	Aggregated	25	DSL	6270.744281	0.084739215
Riverside (SC)	2035	LHDT1	Aggregated	30	GAS	10127.10049	0.008609937
Riverside (SC)	2035	LHDT1	Aggregated	30	DSL	14292.8077	0.066177356
Riverside (SC)	2035	LHDT1	Aggregated	35	GAS	11616.60724	0.007083899

Riverside (SC)	2035	LHDT1	Aggregated	35	DSL	16133.96976	0.054407253
Riverside (SC)	2035	LHDT1	Aggregated	40	GAS	11652.8899	0.006134805
Riverside (SC)	2035	LHDT1	Aggregated	40	DSL	17570.25228	0.046637052
Riverside (SC)	2035	LHDT1	Aggregated	45	GAS	17473.76925	0.005618996
Riverside (SC)	2035	LHDT1	Aggregated	45	DSL	23015.22308	0.041484105
Riverside (SC)	2035	LHDT1	Aggregated	50	GAS	26617.37534	0.005423853
Riverside (SC)	2035	LHDT1	Aggregated	50	DSL	34911.85003	0.038229521
Riverside (SC)	2035	LHDT1	Aggregated	55	GAS	26694.66973	0.005530579
Riverside (SC)	2035	LHDT1	Aggregated	55	DSL	36427.46443	0.036523086
Riverside (SC)	2035	LHDT1	Aggregated	60	GAS	34801.42936	0.005925155
Riverside (SC)	2035	LHDT1	Aggregated	60	DSL	61327.00882	0.037216633
Riverside (SC)	2035	LHDT1	Aggregated	65	GAS	22870.49896	0.006598688
Riverside (SC)	2035	LHDT1	Aggregated	65	DSL	75046.57358	0.040160058
Riverside (SC)	2035	LHDT1	Aggregated	70	GAS	6829.393298	0.007127437
Riverside (SC)	2035	LHDT1	Aggregated	70	DSL	25120.10233	0.04221227
Riverside (SC)	2035	LHDT2	Aggregated	5	GAS	168.8231149	0.024362361
Riverside (SC)	2035	LHDT2	Aggregated	5	DSL	302.3729325	0.741732449
Riverside (SC)	2035	LHDT2	Aggregated	10	GAS	48.92822795	0.015294375
Riverside (SC)	2035	LHDT2	Aggregated	10	DSL	78.67304509	0.554432015
Riverside (SC)	2035	LHDT2	Aggregated	15	GAS	152.7743264	0.010101556
Riverside (SC)	2035	LHDT2	Aggregated	15	DSL	369.1107843	0.273345193
Riverside (SC)	2035	LHDT2	Aggregated	20	GAS	388.9753952	0.007112559
Riverside (SC)	2035	LHDT2	Aggregated	20	DSL	708.0714214	0.109246488
Riverside (SC)	2035	LHDT2	Aggregated	25	GAS	1567.620326	0.005248773
Riverside (SC)	2035	LHDT2	Aggregated	25	DSL	3021.09147	0.066775054
Riverside (SC)	2035	LHDT2	Aggregated	30	GAS	3507.523838	0.004090146
Riverside (SC)	2035	LHDT2	Aggregated	30	DSL	6885.925737	0.050824053
Riverside (SC)	2035	LHDT2	Aggregated	35	GAS	4023.414879	0.003365202
Riverside (SC)	2035	LHDT2	Aggregated	35	DSL	7772.952656	0.040728975
Riverside (SC)	2035	LHDT2	Aggregated	40	GAS	4035.981387	0.002914335
Riverside (SC)	2035	LHDT2	Aggregated	40	DSL	8464.918504	0.033890826
Riverside (SC)	2035	LHDT2	Aggregated	45	GAS	6052.044435	0.002669301
Riverside (SC)	2035	LHDT2	Aggregated	45	DSL	11088.17247	0.02904634
Riverside (SC)	2035	LHDT2	Aggregated	50	GAS	9218.934736	0.002576598
Riverside (SC)	2035	LHDT2	Aggregated	50	DSL	16819.67684	0.025521025
Riverside (SC)	2035	LHDT2	Aggregated	55	GAS	9245.705668	0.002627298
Riverside (SC)	2035	LHDT2	Aggregated	55	DSL	17549.86284	0.022935012
Riverside (SC)	2035	LHDT2	Aggregated	60	GAS	12053.48393	0.002814741
Riverside (SC)	2035	LHDT2	Aggregated	60	DSL	29545.85531	0.022101317
Riverside (SC)	2035	LHDT2	Aggregated	65	GAS	7921.203144	0.003134703
Riverside (SC)	2035	LHDT2	Aggregated	65	DSL	36155.6066	0.022623628
Riverside (SC)	2035	LHDT2	Aggregated	70	GAS	2365.36211	0.003385885
Riverside (SC)	2035	LHDT2	Aggregated	70	DSL	12102.2519	0.022987793
Riverside (SC)	2035	MCY	Aggregated	5	GAS	424.4559673	12.45066285
Riverside (SC)	2035	MCY	Aggregated	10	GAS	180.2991782	8.05081308

Riverside (SC)	2035	MCY	Aggregated	15	GAS	601.5503816	5.518146155
Riverside (SC)	2035	MCY	Aggregated	20	GAS	1901.713112	3.959233217
Riverside (SC)	2035	MCY	Aggregated	25	GAS	11449.8901	3.004694045
Riverside (SC)	2035	MCY	Aggregated	30	GAS	23750.43472	2.399081484
Riverside (SC)	2035	MCY	Aggregated	35	GAS	25582.22829	2.016354387
Riverside (SC)	2035	MCY	Aggregated	40	GAS	20899.34885	1.786662314
Riverside (SC)	2035	MCY	Aggregated	45	GAS	20660.87131	1.663974051
Riverside (SC)	2035	MCY	Aggregated	50	GAS	24573.60456	1.629735337
Riverside (SC)	2035	MCY	Aggregated	55	GAS	20806.27223	1.674210743
Riverside (SC)	2035	MCY	Aggregated	60	GAS	25766.57976	1.813816681
Riverside (SC)	2035	MCY	Aggregated	65	GAS	18310.77171	2.096961532
Riverside (SC)	2035	MCY	Aggregated	70	GAS	3999.313109	2.289488423
Riverside (SC)	2035	MDV	Aggregated	5	GAS	11317.67104	0.06741215
Riverside (SC)	2035	MDV	Aggregated	5	DSL	307.1731716	0.103669132
Riverside (SC)	2035	MDV	Aggregated	10	GAS	4807.487571	0.042757203
Riverside (SC)	2035	MDV	Aggregated	10	DSL	130.4801314	0.077588762
Riverside (SC)	2035	MDV	Aggregated	15	GAS	16039.70696	0.028226395
Riverside (SC)	2035	MDV	Aggregated	15	DSL	435.3340577	0.037940133
Riverside (SC)	2035	MDV	Aggregated	20	GAS	50707.17595	0.020056425
Riverside (SC)	2035	MDV	Aggregated	20	DSL	1376.244636	0.014812664
Riverside (SC)	2035	MDV	Aggregated	25	GAS	305299.2526	0.014859173
Riverside (SC)	2035	MDV	Aggregated	25	DSL	8286.134079	0.008916521
Riverside (SC)	2035	MDV	Aggregated	30	GAS	633280.3117	0.011627115
Riverside (SC)	2035	MDV	Aggregated	30	DSL	17187.87559	0.006743267
Riverside (SC)	2035	MDV	Aggregated	35	GAS	682123.1567	0.009590005
Riverside (SC)	2035	MDV	Aggregated	35	DSL	18513.52038	0.00536844
Riverside (SC)	2035	MDV	Aggregated	40	GAS	557259.1116	0.008298367
Riverside (SC)	2035	MDV	Aggregated	40	DSL	15124.58244	0.004431947
Riverside (SC)	2035	MDV	Aggregated	45	GAS	550900.3593	0.007575176
Riverside (SC)	2035	MDV	Aggregated	45	DSL	14951.9994	0.003759421
Riverside (SC)	2035	MDV	Aggregated	50	GAS	655229.2678	0.007297019
Riverside (SC)	2035	MDV	Aggregated	50	DSL	17783.59272	0.003257264
Riverside (SC)	2035	MDV	Aggregated	55	GAS	554777.3217	0.007451887
Riverside (SC)	2035	MDV	Aggregated	55	DSL	15057.22412	0.002871354
Riverside (SC)	2035	MDV	Aggregated	60	GAS	687038.6942	0.007966405
Riverside (SC)	2035	MDV	Aggregated	60	DSL	18646.9331	0.00271489
Riverside (SC)	2035	MDV	Aggregated	65	GAS	488237.4302	0.008679777
Riverside (SC)	2035	MDV	Aggregated	65	DSL	13251.26339	0.00272586
Riverside (SC)	2035	MDV	Aggregated	70	GAS	106637.4692	0.009311933
Riverside (SC)	2035	MDV	Aggregated	70	DSL	2894.25002	0.002733508
Riverside (SC)	2035	MH	Aggregated	5	GAS	63.12306239	0.106645824
Riverside (SC)	2035	MH	Aggregated	5	DSL	16.51953002	0.857227969
Riverside (SC)	2035	MH	Aggregated	10	GAS	19.03623173	0.066926384
Riverside (SC)	2035	MH	Aggregated	10	DSL	4.723837153	0.642782304
Riverside (SC)	2035	MH	Aggregated	15	GAS	49.21283546	0.044277829

Riverside (SC)	2035	MH	Aggregated	15	DSL	13.05159282	0.317355222
Riverside (SC)	2035	MH	Aggregated	20	GAS	139.1164356	0.031134012
Riverside (SC)	2035	MH	Aggregated	20	DSL	34.98164236	0.129880471
Riverside (SC)	2035	MH	Aggregated	25	GAS	565.2534836	0.02298576
Riverside (SC)	2035	MH	Aggregated	25	DSL	145.625331	0.083778784
Riverside (SC)	2035	MH	Aggregated	30	GAS	1284.326164	0.017915703
Riverside (SC)	2035	MH	Aggregated	30	DSL	337.0367742	0.065516748
Riverside (SC)	2035	MH	Aggregated	35	GAS	1503.510446	0.014739783
Riverside (SC)	2035	MH	Aggregated	35	DSL	398.9734469	0.0530836
Riverside (SC)	2035	MH	Aggregated	40	GAS	1452.495395	0.012770729
Riverside (SC)	2035	MH	Aggregated	40	DSL	388.5016771	0.044340211
Riverside (SC)	2035	MH	Aggregated	45	GAS	2104.811258	0.011682961
Riverside (SC)	2035	MH	Aggregated	45	DSL	514.6635278	0.038251467
Riverside (SC)	2035	MH	Aggregated	50	GAS	3396.385207	0.011280576
Riverside (SC)	2035	MH	Aggregated	50	DSL	860.5353279	0.034261199
Riverside (SC)	2035	MH	Aggregated	55	GAS	3722.269246	0.011509271
Riverside (SC)	2035	MH	Aggregated	55	DSL	1026.49847	0.032046316
Riverside (SC)	2035	MH	Aggregated	60	GAS	4863.97149	0.012357233
Riverside (SC)	2035	MH	Aggregated	60	DSL	1488.903835	0.032279859
Riverside (SC)	2035	MH	Aggregated	65	GAS	2374.046688	0.013827117
Riverside (SC)	2035	MH	Aggregated	65	DSL	943.3279966	0.034585906
Riverside (SC)	2035	MH	Aggregated	70	GAS	665.7199017	0.014936256
Riverside (SC)	2035	MH	Aggregated	70	DSL	285.1653738	0.037991523
Riverside (SC)	2035	MHDT	Aggregated	5	GAS	170.3027503	0.070715658
Riverside (SC)	2035	MHDT	Aggregated	5	DSL	2013.673904	0.242825604
Riverside (SC)	2035	MHDT	Aggregated	10	GAS	51.35876643	0.04437814
Riverside (SC)	2035	MHDT	Aggregated	10	DSL	575.8195051	0.196635855
Riverside (SC)	2035	MHDT	Aggregated	15	GAS	132.7736791	0.029360135
Riverside (SC)	2035	MHDT	Aggregated	15	DSL	1590.944284	0.138413915
Riverside (SC)	2035	MHDT	Aggregated	20	GAS	375.3289318	0.020644617
Riverside (SC)	2035	MHDT	Aggregated	20	DSL	4264.141913	0.100081626
Riverside (SC)	2035	MHDT	Aggregated	25	GAS	1525.024598	0.015241602
Riverside (SC)	2035	MHDT	Aggregated	25	DSL	17751.22709	0.07334374
Riverside (SC)	2035	MHDT	Aggregated	30	GAS	3465.045415	0.011879703
Riverside (SC)	2035	MHDT	Aggregated	30	DSL	41083.62381	0.054053885
Riverside (SC)	2035	MHDT	Aggregated	35	GAS	4056.393248	0.009773786
Riverside (SC)	2035	MHDT	Aggregated	35	DSL	48633.49123	0.039838122
Riverside (SC)	2035	MHDT	Aggregated	40	GAS	3918.757282	0.008468128
Riverside (SC)	2035	MHDT	Aggregated	40	DSL	47357.01849	0.029362247
Riverside (SC)	2035	MHDT	Aggregated	45	GAS	5678.67167	0.007746842
Riverside (SC)	2035	MHDT	Aggregated	45	DSL	62735.71427	0.021643044
Riverside (SC)	2035	MHDT	Aggregated	50	GAS	9163.271233	0.007480024
Riverside (SC)	2035	MHDT	Aggregated	50	DSL	104896.2974	0.015955945
Riverside (SC)	2035	MHDT	Aggregated	55	GAS	10042.48948	0.007631669
Riverside (SC)	2035	MHDT	Aggregated	55	DSL	125126.6336	0.011766985

Riverside (SC)	2035	MHDT	Aggregated	60	GAS	13122.74295	0.008193943
Riverside (SC)	2035	MHDT	Aggregated	60	DSL	181492.2576	0.010106973
Riverside (SC)	2035	MHDT	Aggregated	65	GAS	6405.054902	0.009168607
Riverside (SC)	2035	MHDT	Aggregated	65	DSL	114988.439	0.010106973
Riverside (SC)	2035	MHDT	Aggregated	70	GAS	1796.077786	0.009904065
Riverside (SC)	2035	MHDT	Aggregated	70	DSL	34760.67846	0.010106973
Riverside (SC)	2035	MHDT	Aggregated	75	DSL	0	0
Riverside (SC)	2035	OBUS	Aggregated	5	GAS	89.67072734	0.071402625
Riverside (SC)	2035	OBUS	Aggregated	5	DSL	62.34662013	0.328921996
Riverside (SC)	2035	OBUS	Aggregated	10	GAS	27.04229928	0.044809251
Riverside (SC)	2035	OBUS	Aggregated	10	DSL	18.37542691	0.270634711
Riverside (SC)	2035	OBUS	Aggregated	15	GAS	69.91027657	0.029645354
Riverside (SC)	2035	OBUS	Aggregated	15	DSL	53.85824938	0.196184943
Riverside (SC)	2035	OBUS	Aggregated	20	GAS	197.6246318	0.020845169
Riverside (SC)	2035	OBUS	Aggregated	20	DSL	135.0015901	0.137324677
Riverside (SC)	2035	OBUS	Aggregated	25	GAS	802.9821286	0.015389666
Riverside (SC)	2035	OBUS	Aggregated	25	DSL	568.7306622	0.101253416
Riverside (SC)	2035	OBUS	Aggregated	30	GAS	1824.47519	0.011995109
Riverside (SC)	2035	OBUS	Aggregated	30	DSL	1316.347787	0.074618546
Riverside (SC)	2035	OBUS	Aggregated	35	GAS	2135.841801	0.009868734
Riverside (SC)	2035	OBUS	Aggregated	35	DSL	1544.331549	0.054736861
Riverside (SC)	2035	OBUS	Aggregated	40	GAS	2063.37135	0.008550392
Riverside (SC)	2035	OBUS	Aggregated	40	DSL	1530.137072	0.040694484
Riverside (SC)	2035	OBUS	Aggregated	45	GAS	2990.031683	0.007822098
Riverside (SC)	2035	OBUS	Aggregated	45	DSL	2015.048655	0.029899486
Riverside (SC)	2035	OBUS	Aggregated	50	GAS	4824.802858	0.007552689
Riverside (SC)	2035	OBUS	Aggregated	50	DSL	3363.4886	0.022014739
Riverside (SC)	2035	OBUS	Aggregated	55	GAS	5287.74394	0.007705807
Riverside (SC)	2035	OBUS	Aggregated	55	DSL	3938.369511	0.016069098
Riverside (SC)	2035	OBUS	Aggregated	60	GAS	6909.611872	0.008273543
Riverside (SC)	2035	OBUS	Aggregated	60	DSL	5834.015506	0.013944332
Riverside (SC)	2035	OBUS	Aggregated	65	GAS	3372.499451	0.009257676
Riverside (SC)	2035	OBUS	Aggregated	65	DSL	4260.548908	0.014877454
Riverside (SC)	2035	OBUS	Aggregated	70	GAS	945.701706	0.010000278
Riverside (SC)	2035	OBUS	Aggregated	70	DSL	1339.379305	0.015112146
Riverside (SC)	2035	OBUS	Aggregated	75	DSL	0	0
Riverside (SC)	2035	SBUS	Aggregated	5	GAS	113.2539453	0.057796571
Riverside (SC)	2035	SBUS	Aggregated	5	DSL	316.7553962	0.278113035
Riverside (SC)	2035	SBUS	Aggregated	10	GAS	396.9492736	0.036434491
Riverside (SC)	2035	SBUS	Aggregated	10	DSL	1110.211428	0.22427024
Riverside (SC)	2035	SBUS	Aggregated	15	GAS	793.8985472	0.024184346
Riverside (SC)	2035	SBUS	Aggregated	15	DSL	2220.422857	0.155506006
Riverside (SC)	2035	SBUS	Aggregated	20	GAS	1077.588157	0.016938625
Riverside (SC)	2035	SBUS	Aggregated	20	DSL	3013.862894	0.110950221
Riverside (SC)	2035	SBUS	Aggregated	25	GAS	1701.045321	0.012509178

Riverside (SC)	2035	SBUS	Aggregated	25	DSL	4757.585115	0.081464539
Riverside (SC)	2035	SBUS	Aggregated	30	GAS	2040.807157	0.00974599
Riverside (SC)	2035	SBUS	Aggregated	30	DSL	5707.851304	0.060354684
Riverside (SC)	2035	SBUS	Aggregated	35	GAS	2094.631805	0.00799815
Riverside (SC)	2035	SBUS	Aggregated	35	DSL	5858.391293	0.044757572
Riverside (SC)	2035	SBUS	Aggregated	40	GAS	1413.987203	0.006928618
Riverside (SC)	2035	SBUS	Aggregated	40	DSL	3954.723832	0.033233307
Riverside (SC)	2035	SBUS	Aggregated	45	GAS	678.3970234	0.006335863
Riverside (SC)	2035	SBUS	Aggregated	45	DSL	1897.381299	0.024720787
Riverside (SC)	2035	SBUS	Aggregated	50	GAS	339.761836	0.006129666
Riverside (SC)	2035	SBUS	Aggregated	50	DSL	950.2661885	0.018438059
Riverside (SC)	2035	SBUS	Aggregated	55	GAS	505.7137808	0.006177086
Riverside (SC)	2035	SBUS	Aggregated	55	DSL	1414.410496	0.013808877
Riverside (SC)	2035	SBUS	Aggregated	60	GAS	281.4534686	0.006652257
Riverside (SC)	2035	SBUS	Aggregated	60	DSL	787.1858652	0.011976911
Riverside (SC)	2035	SBUS	Aggregated	65	DSL	0	0
Riverside (SC)	2035	SBUS	Aggregated	70	DSL	0	0
Riverside (SC)	2035	SBUS	Aggregated	75	DSL	0	0
Riverside (SC)	2035	UBUS	Aggregated	5	GAS	313.063322	0.292947539
Riverside (SC)	2035	UBUS	Aggregated	5	DSL	297.5044327	0.445106763
Riverside (SC)	2035	UBUS	Aggregated	10	GAS	972.2079812	0.184290541
Riverside (SC)	2035	UBUS	Aggregated	10	DSL	923.8903559	0.33508433
Riverside (SC)	2035	UBUS	Aggregated	15	GAS	1700.278457	0.12232579
Riverside (SC)	2035	UBUS	Aggregated	15	DSL	1615.776561	0.168282429
Riverside (SC)	2035	UBUS	Aggregated	20	GAS	16066.34534	0.085660594
Riverside (SC)	2035	UBUS	Aggregated	20	DSL	15267.86634	0.072471146
Riverside (SC)	2035	UBUS	Aggregated	25	GAS	83.26778103	0.063455866
Riverside (SC)	2035	UBUS	Aggregated	25	DSL	79.1294675	0.049136796
Riverside (SC)	2035	UBUS	Aggregated	30	GAS	187.2910219	0.049453865
Riverside (SC)	2035	UBUS	Aggregated	30	DSL	177.9828722	0.038343571
Riverside (SC)	2035	UBUS	Aggregated	35	GAS	214.8590393	0.040696068
Riverside (SC)	2035	UBUS	Aggregated	35	DSL	204.1807906	0.030485374
Riverside (SC)	2035	UBUS	Aggregated	40	GAS	216.5312749	0.035241809
Riverside (SC)	2035	UBUS	Aggregated	40	DSL	205.7699181	0.025156934
Riverside (SC)	2035	UBUS	Aggregated	45	GAS	317.7162247	0.032259421
Riverside (SC)	2035	UBUS	Aggregated	45	DSL	301.9260915	0.022162134
Riverside (SC)	2035	UBUS	Aggregated	50	GAS	490.2772096	0.031140938
Riverside (SC)	2035	UBUS	Aggregated	50	DSL	465.9109927	0.021395596
Riverside (SC)	2035	UBUS	Aggregated	55	GAS	500.3682828	0.031780214
Riverside (SC)	2035	UBUS	Aggregated	55	DSL	475.5005511	0.022796101
Riverside (SC)	2035	UBUS	Aggregated	60	GAS	673.8021437	0.034077909
Riverside (SC)	2035	UBUS	Aggregated	60	DSL	640.3149474	0.026491232
Riverside (SC)	2035	UBUS	Aggregated	65	GAS	482.3494682	0.038049465
Riverside (SC)	2035	UBUS	Aggregated	65	DSL	458.377251	0.03240975
Riverside (SC)	2035	UBUS	Aggregated	70	GAS	148.3932901	0.041145376

| Riverside (SC) | 2035 | UBUS | Aggregated | 70 | DSL | 141.0183132 | 0.040278169 |

TOG_RUNEX	CO_RUNEX	NOx_RUNEX	CO2_RUNEX	PM10_RUNEX	PM2_5_RUNEX
3.032489178	54.36602799	5.372601404	3797.443888	0.007683349	0.007064556
3.745579847	13.53372883	15.65707768	3413.027901	0.00996378	0.009532751
1.903061251	49.38507484	4.690383862	3221.223028	0.004834345	0.004445001
7.500616507	25.73076072	6.422106513	4013.164288	0.007187956	0.006877009
1.259046364	44.95275074	4.168599618	2323.696169	0.003208923	0.002950486
2.191446	7.978134659	7.207687177	2559.496935	0.007528494	0.007202815
0.885300066	41.32597975	3.710102524	1877.396173	0.00224707	0.002066098
0.339514728	1.560673412	4.122947841	1865.210322	0.006160067	0.005893585
0.653603369	37.91901603	3.386613284	1766.19979	0.001660001	0.00152631
0.368428259	1.589683546	2.703786243	1744.768996	0.006693452	0.006403897
0.509435574	34.9118866	3.136737916	1681.610286	0.0012937	0.001189509
0.206704917	0.953021318	1.715010276	1614.068935	0.006230563	0.005961031
0.419127837	32.24803032	2.948912658	1612.798371	0.001063639	0.000977977
0.204447808	0.876152702	1.171494651	1571.986677	0.005712435	0.005465317
0.363137495	29.81661979	2.826502213	1554.44481	0.00092255	0.000848251
0.129696652	0.574896426	0.852276572	1489.353363	0.005374078	0.005141598
0.33220667	27.66632942	2.747248541	1520.257615	0.000844151	0.000776165
0.081617411	0.376742143	0.642664665	1419.396036	0.005076942	0.004857316
0.320764772	25.75254994	2.712104465	1501.378114	0.000814864	0.000749238
0.045840763	0.230125355	0.493889849	1351.741683	0.004823374	0.004614717
0.327267752	24.07403789	2.712833582	1473.108627	0.000829823	0.000762991
0.030911404	0.16014293	0.39263267	1309.813217	0.004571138	0.004373393
0.351379669	22.51140685	2.770753011	1452.492845	0.000891496	0.000819698
0.026548847	0.137510762	0.354970686	1293.34567	0.004450669	0.004258135
0.393176041	20.85829754	2.944527346	1448.531501	0.00101039	0.000929016
0.026548847	0.137510762	0.356840121	1293.34567	0.004450669	0.004258135
0.424714552	20.11569834	3.046942663	1444.570156	0.001097455	0.00100907
0.026548847	0.137510762	0.357161351	1293.34567	0.004450669	0.004258135
0	0	0	0	0	0
0.045016948	0.647959398	0.042991518	656.0165565	0.006740823	0.006197938
0.101012457	2.664060098	0.050003168	487.4651379	0.002519191	0.002410212
0.028378968	0.589619092	0.037221736	486.737566	0.004242348	0.003900683
0.075596261	1.994195519	0.041749044	406.1044724	0.002314603	0.002214474
0.018620607	0.528853257	0.033256907	371.6136995	0.002816626	0.002589784
0.036979131	0.974221085	0.028370115	334.0197729	0.001996823	0.001910442
0.013165803	0.489566222	0.029613519	298.5010559	0.001972775	0.001813894

0.014452525	0.379323899	0.019064271	274.0046688	0.001693992	0.001620711
0.009711772	0.447851506	0.027074853	247.1273504	0.001457625	0.001340233
0.008705777	0.227948732	0.014799111	229.6821273	0.001447218	0.001384612
0.007575079	0.412224316	0.025080014	212.7131971	0.001136131	0.00104463
0.006585821	0.172294136	0.012563376	198.9468676	0.001278899	0.001223574
0.006235906	0.380899015	0.023597743	190.1212904	0.000934166	0.000858931
0.005244686	0.137098539	0.011084305	179.8439608	0.001154679	0.001104728
0.005392426	0.35102898	0.022642653	175.9169061	0.000810271	0.000745014
0.004331371	0.113121118	0.010045961	168.293704	0.001059103	0.001013287
0.004926304	0.325139102	0.022018813	169.1591273	0.000741388	0.000681679
0.003675884	0.095891798	0.00927742	162.5587895	0.000983458	0.000940914
0.00475575	0.302942694	0.021755569	169.0330302	0.000715603	0.00065797
0.003186998	0.08301319	0.008692051	162.972596	0.000922517	0.00088261
0.004874092	0.285612358	0.021728951	176.0366724	0.000728637	0.000669955
0.002812022	0.073100355	0.008230096	170.5379886	0.00087307	0.000835302
0.005233905	0.267589533	0.022182665	189.4660584	0.000782648	0.000719616
0.00266127	0.069075801	0.008068481	184.8836585	0.000854502	0.000817537
0.005727647	0.239740914	0.023669438	207.0430786	0.000886835	0.000815412
0.002674604	0.069350757	0.008153616	207.8466502	0.000861757	0.000824478
0.006160968	0.229637447	0.024435876	220.6008274	0.000963142	0.000885574
0.0026839	0.069543211	0.008190305	224.4415153	0.000866815	0.000829317
0.063777968	0.810897471	0.059041031	723.5951761	0.007252896	0.00666877
0.299142908	2.606628473	0.164879702	523.9949268	0.011855103	0.011342256
0.04050514	0.734835958	0.050787104	536.8727407	0.004571824	0.004203624
0.223645458	1.949738351	0.140576825	441.0813893	0.010415246	0.009964687
0.026772967	0.657382055	0.045170246	410.002411	0.003039923	0.002795097
0.110129243	0.959556754	0.10079478	365.7291658	0.008785078	0.008405039
0.019044187	0.606770306	0.04007197	329.2798069	0.002132043	0.001960334
0.043866599	0.381715351	0.073333163	300.4744314	0.007359273	0.007040914
0.014122004	0.554110938	0.036552278	272.6240725	0.001577077	0.001450064
0.026754617	0.233048004	0.061169553	251.9369792	0.006240314	0.005970361
0.011057685	0.509386004	0.033814594	234.6592618	0.001230274	0.001131192
0.020345263	0.177713114	0.055159446	217.8541891	0.0054822	0.005245043
0.009124022	0.470322889	0.031805234	209.7331339	0.001012094	0.000930583
0.016289154	0.142853203	0.051451258	196.6217784	0.004933532	0.00472011
0.007896146	0.433425612	0.030540234	194.0767597	0.000877998	0.000807287
0.013539443	0.119404605	0.049094695	183.511142	0.004523672	0.00432798
0.007206809	0.401615045	0.029748951	186.6262896	0.000803186	0.0007385
0.011587578	0.10300449	0.047556412	176.9358734	0.004212905	0.004030656
0.006939043	0.374505596	0.02947377	186.4845598	0.000774809	0.000712408
0.01016182	0.091375202	0.046579673	177.2298039	0.003978377	0.003806274
0.007081202	0.353456492	0.029549903	194.1821821	0.000788217	0.000724736
0.009108531	0.083311113	0.045969538	185.3081979	0.003807772	0.00364305
0.007563049	0.331813452	0.03032945	208.993866	0.000845656	0.00077755
0.00875542	0.081891767	0.046284021	200.7267124	0.003778661	0.003615198

0.008231509	0.298596953	0.03261733	228.5465353	0.000956913	0.000879846
0.008939854	0.086057247	0.04741492	225.4612704	0.003877847	0.003710093
0.008825723	0.286618543	0.033824638	243.5592174	0.001038476	0.000954841
0.009068446	0.08897286	0.047946773	243.2511562	0.003947001	0.003776255
0.056987607	0.811898602	0.053481708	816.7422376	0.006631698	0.006097601
0.296926406	2.574798703	0.150364906	597.1679043	0.008988452	0.008599616
0.0359407	0.738706459	0.046234994	605.9840281	0.004173919	0.003837764
0.222271083	1.92745292	0.124923843	502.6759524	0.008432362	0.008067582
0.023596436	0.662778046	0.041272587	462.7681919	0.002771351	0.002548155
0.108550006	0.941257214	0.083769968	416.8012099	0.00734763	0.007029775
0.016688059	0.61334635	0.03671679	371.6638471	0.001941163	0.001784828
0.042223817	0.366077667	0.055100487	342.4340147	0.006267387	0.005996262
0.012314242	0.56110137	0.033552581	307.7136896	0.001434329	0.001318813
0.025353935	0.219802651	0.041870385	287.1185773	0.00537147	0.005139103
0.009607191	0.516447373	0.031071201	264.8624121	0.001118009	0.001027968
0.019154244	0.166057496	0.034857511	248.276315	0.004758522	0.00455267
0.007909785	0.477181859	0.029232358	236.7284351	0.000919283	0.000845247
0.015232512	0.132062638	0.030161092	224.0789163	0.00430222	0.004116108
0.006840515	0.439802218	0.028054812	219.0552763	0.000797366	0.000733149
0.012558764	0.108887994	0.026811605	209.1374524	0.003946663	0.003775932
0.006248978	0.407384478	0.027292604	210.6453013	0.000729575	0.000670817
0.010634558	0.092212709	0.024288628	201.6439842	0.003660284	0.003501942
0.006031628	0.379574239	0.026982882	210.4856482	0.000704185	0.000647472
0.00919211	0.079716267	0.022325504	201.9789604	0.003423802	0.00327569
0.006179537	0.357795827	0.026971267	219.1775142	0.000716987	0.000659243
0.008075951	0.070052541	0.020742077	211.1854572	0.003224747	0.003085246
0.006633549	0.335231029	0.02756819	235.8960138	0.000770101	0.000708079
0.00761011	0.066034945	0.02007579	228.7570815	0.00313726	0.003001543
0.007260345	0.300680952	0.029479027	257.9455989	0.000872572	0.000802298
0.007614037	0.066102825	0.020150917	256.945683	0.003139439	0.003003628
0.007809122	0.288105766	0.030467637	274.8837457	0.000947625	0.000871306
0.007616775	0.066150338	0.020173825	277.2198274	0.003140958	0.003005081
0.074833266	0.421695932	0.179255039	1311.50698	0.007454417	0.006854062
0.867275604	3.445140567	0.776039984	1153.484537	0.031578447	0.030212377
0.046979357	0.383197886	0.156391147	1289.976361	0.004690302	0.004312559
0.643948661	2.563844329	0.754222388	969.6837303	0.025238102	0.024146313
0.031028703	0.348237277	0.139527829	896.1299918	0.00311331	0.002862574
0.331285237	1.324825976	0.707205855	633.2846206	0.020188425	0.019315083
0.021847473	0.320561442	0.123797828	778.038219	0.002180116	0.002004537
0.147893759	0.598883376	0.678506772	539.7795088	0.016386807	0.015677921
0.016122527	0.29400789	0.113107642	713.2017007	0.00161054	0.001480832
0.096469963	0.397431508	0.681863601	478.7330168	0.013628531	0.013038967
0.0125636	0.270634802	0.10480521	647.2754931	0.001255153	0.001154067
0.07533852	0.316437354	0.69693037	434.7413341	0.011787582	0.011277657
0.010336809	0.249992893	0.09851642	647.2754931	0.001031947	0.000948837

0.061939041	0.2665858	0.716387621	434.7413341	0.010514602	0.010059745
0.008951893	0.231043147	0.094523004	644.8428385	0.000895062	0.000822976
0.053093184	0.235700589	0.739815989	422.8397521	0.009632404	0.009215711
0.008199225	0.214631241	0.091657074	641.8815307	0.000818999	0.000753039
0.047226895	0.218112577	0.763542183	412.4469067	0.009042008	0.008650855
0.007914473	0.199726369	0.090529732	676.9116356	0.000790585	0.000726913
0.043521768	0.211419092	0.788994808	432.3954527	0.008691673	0.008315675
0.008070207	0.186601649	0.090643448	713.2017007	0.000805097	0.000740257
0.041579105	0.215361236	0.815118628	451.8379035	0.008563238	0.008192796
0.008645972	0.174121319	0.092992507	723.7147448	0.000864933	0.000795274
0.042368662	0.23597406	0.84545887	456.2847042	0.008791642	0.008411319
0.009628789	0.160598334	0.099782167	733.5788922	0.000980285	0.000901336
0.045719556	0.276273315	0.879676128	462.2249817	0.009397372	0.008990846
0.010400339	0.154869935	0.103272631	726.6583366	0.001064756	0.000979004
0.048055863	0.30448063	0.895175803	456.9724251	0.009819698	0.009394903
0.035549499	0.228799782	0.071884964	1375.427166	0.00758672	0.006975709
0.84441308	3.258601972	0.36311226	1196.470267	0.019534713	0.01868965
0.022317516	0.207911877	0.062716072	1427.6346	0.004773546	0.0043891
0.631183988	2.436530888	0.321015715	1063.340508	0.017529313	0.016771003
0.014740167	0.188943282	0.055953534	1004.282342	0.003168566	0.00291338
0.311185329	1.203360108	0.251324452	707.8338011	0.014946828	0.014300235
0.010378629	0.173927189	0.04964548	878.9175326	0.00221881	0.002040114
0.124369863	0.483523486	0.202815395	603.7301591	0.012597945	0.012052963
0.007658997	0.159520015	0.045358495	794.765854	0.001639125	0.001507115
0.076018959	0.297338389	0.183541005	538.0180329	0.010721551	0.010257742
0.005968331	0.146838466	0.042029049	718.3460603	0.00127743	0.00117455
0.057859806	0.227635701	0.175665059	485.2064469	0.009446184	0.009037547
0.004910495	0.135638775	0.039507114	718.3460603	0.001050262	0.000965677
0.046367231	0.183803081	0.172027851	485.2064469	0.008514463	0.008146131
0.004252591	0.125357201	0.037905672	701.9373453	0.000910948	0.000837583
0.038582452	0.15449663	0.17116853	467.4844015	0.007808384	0.007470597
0.003895037	0.116452585	0.036756375	685.3944062	0.000833534	0.000766404
0.033067327	0.134268799	0.171534938	449.3673343	0.007261509	0.006947379
0.003759766	0.108365641	0.036304288	714.5469982	0.000804616	0.000739815
0.02905399	0.120313019	0.173074832	465.9182896	0.006834839	0.006539167
0.003833747	0.101244554	0.03634989	747.0799027	0.000819386	0.000753396
0.026109987	0.111211662	0.175315056	482.247871	0.006505932	0.006224489
0.004107264	0.094473095	0.037291911	754.8978875	0.000880284	0.000809389
0.02516088	0.110946381	0.179748681	483.9285764	0.006413118	0.006135689
0.004574151	0.087135922	0.040014705	762.3264314	0.000997683	0.000917333
0.025755496	0.118488523	0.185975189	485.2064469	0.006526494	0.006244161
0.004940675	0.084027861	0.041414453	747.0799027	0.001083654	0.000996379
0.026170074	0.123767617	0.1887464	479.3251566	0.006605542	0.006319789
15.63522185	42.30639847	1.607610758	566.8495243	0.013552458	0.012634478
10.10855766	32.6359192	1.440202032	420.4495835	0.008719654	0.008129153

6.927296108	26.66081944	1.33129256	323.6794706	0.005917405	0.005516758
4.969737423	22.30552272	1.228312859	258.6255813	0.004234182	0.003947557
3.771066549	19.44538381	1.162734623	214.478301	0.003193516	0.002977377
3.010641659	17.42629121	1.11394235	184.6091518	0.002537975	0.002366233
2.53009597	16.05478325	1.081227071	164.9214009	0.002124666	0.001980915
2.2416557	15.24709873	1.06654964	152.9175461	0.001873069	0.001746358
2.087557179	14.88242583	1.061880828	147.1610561	0.001738452	0.001620862
2.044473934	15.01472063	1.067919236	146.9887316	0.001698318	0.001583454
2.100204185	15.67237605	1.079062468	152.3813226	0.001745983	0.001627904
2.275250733	17.17891109	1.107622625	163.9587159	0.001888683	0.001760961
2.630112542	20.35486321	1.182011556	183.1020991	0.002149465	0.002004113
2.871500804	22.51813145	1.216870854	196.2148649	0.002337083	0.002179045
0.098367651	1.130629715	0.095917532	1115.221546	0.007292087	0.006704805
0.118020414	3.015773142	0.057828937	746.8935911	0.00314544	0.00300937
0.06239121	1.026172138	0.08215675	827.4392726	0.004594388	0.00422437
0.088329647	2.257497981	0.04820992	634.294466	0.002906239	0.002780517
0.041187889	0.919109037	0.072836659	631.9321121	0.003053577	0.002807651
0.043192319	1.1027272	0.032628447	537.9243021	0.00251405	0.002405293
0.029266288	0.849173259	0.064460574	507.5009169	0.002140768	0.001968357
0.016863233	0.429216096	0.021785357	446.7440029	0.002135961	0.002043561
0.02168247	0.776017662	0.05870531	420.1843435	0.001583006	0.001455516
0.010150867	0.257865974	0.016805023	377.7680237	0.0018264	0.001747391
0.016966259	0.713723984	0.054260051	361.6707153	0.001234593	0.001135162
0.007676761	0.194879324	0.014185229	326.2739282	0.001615081	0.001545213
0.013993712	0.65917116	0.051024415	323.25225	0.001015493	0.000933708
0.006111612	0.155044628	0.012445364	296.0484709	0.001458758	0.001395653
0.012108957	0.607498492	0.049017266	299.1251092	0.000880907	0.000809962
0.005045477	0.127901462	0.011217749	276.9126228	0.001338064	0.00128018
0.01105368	0.562840738	0.047801089	287.643139	0.000805898	0.000740993
0.004279851	0.108389416	0.010303953	266.4884121	0.001242075	0.001188343
0.010647793	0.524678674	0.047446541	287.4240388	0.000777555	0.000714934
0.003708178	0.093793392	0.009603062	267.8237783	0.001164205	0.001113842
0.010873776	0.494931884	0.047694441	299.280895	0.000791219	0.000727497
0.003268846	0.082542969	0.00904591	282.6476473	0.001100352	0.001052751
0.011624559	0.464271253	0.049127906	322.1087244	0.00084917	0.00078078
0.003090722	0.077942602	0.008837751	306.0505259	0.001075184	0.001028672
0.012665511	0.417329431	0.053085898	352.2851362	0.000961279	0.00088386
0.00310321	0.07818503	0.008914892	343.6518435	0.001082027	0.001035219
0.01358795	0.400328504	0.055205845	375.4376535	0.001043443	0.000959408
0.003111917	0.078354717	0.008947019	369.9469395	0.001086799	0.001039784
0.155617336	0.679145881	0.294901344	3710.539813	0.00745303	0.006852786
0.97589705	2.22227903	11.67804157	2016.785757	0.113545744	0.108633805
0.097658822	0.616923314	0.257454518	3167.551943	0.004689429	0.004311756
0.731764918	1.699396878	9.735612799	1831.250136	0.099609132	0.095300085
0.064610104	0.561554276	0.228813854	2183.399335	0.003112731	0.002862041

0.361287821	0.897874127	6.623668966	1503.615103	0.076125769	0.072832602
0.045430677	0.516248289	0.203647012	1535.11259	0.002179711	0.002004164
0.147860281	0.42200678	4.536413868	1233.895015	0.058495557	0.055965065
0.033540768	0.473688156	0.185890732	1340.479232	0.00161024	0.001480557
0.095376575	0.291222973	3.633589095	1106.75368	0.049894919	0.047736487
0.026142552	0.436122793	0.172175108	1231.845763	0.001254919	0.001153852
0.074586462	0.237363691	3.148155761	1038.855684	0.045225147	0.043268727
0.021508257	0.402845633	0.161865406	1137.292339	0.001031755	0.000948661
0.06043215	0.200407213	2.813141623	982.5087657	0.042630322	0.040786153
0.018635018	0.372472208	0.155146314	1058.082797	0.000894895	0.000822823
0.050478383	0.174315379	2.573037606	937.7129245	0.041943278	0.040128831
0.01704775	0.345610565	0.150796091	983.1184262	0.000818846	0.000752899
0.043546753	0.15616635	2.394634499	904.4681606	0.043069614	0.041206441
0.016460589	0.32170344	0.148867037	919.6613945	0.000790438	0.000726778
0.039004098	0.144390218	2.263393916	882.7744738	0.045951571	0.043963726
0.016794301	0.300735299	0.148907058	894.3129417	0.000804948	0.00074012
0.036482601	0.138074987	2.167921652	872.6318643	0.050551629	0.048364788
0.018031645	0.281214755	0.152086248	899.8691511	0.000864772	0.000795126
0.036748474	0.139120463	2.142050291	874.0403319	0.057092577	0.054622777
0.020176497	0.260563947	0.161624697	916.5506465	0.000980102	0.000901168
0.039373755	0.146465524	2.178094948	886.9998768	0.065507944	0.062674099
0.021794949	0.251287323	0.167246259	945.3090991	0.001064558	0.000978822
0.043250823	0.15736385	2.221841952	911.5104988	0.075530618	0.072263197
0.103188123	0.416061254	0.177629613	3661.499229	0.007668923	0.007051292
0.276438466	1.275706071	10.1672076	2119.124267	0.006050422	0.005788683
0.064756478	0.377942199	0.155074052	3125.687793	0.004825268	0.004436656
0.223854953	1.033198866	7.73202852	1879.02512	0.005435588	0.005200446
0.042842241	0.344021782	0.137822757	2154.5423	0.003202898	0.002944946
0.157573706	0.727642557	4.658470993	1576.466517	0.004654575	0.00445322
0.030124576	0.316266234	0.122663869	1514.823678	0.002242851	0.002062219
0.113935313	0.526377275	2.621618307	1377.136218	0.004139187	0.003960128
0.02224051	0.290192864	0.111968628	1322.762704	0.001656885	0.001523444
0.083496265	0.385770253	1.433277801	1270.978263	0.0037612	0.003598492
0.017334835	0.267179411	0.103707218	1215.564996	0.001291271	0.001187276
0.061536234	0.284308475	0.896521215	1201.726384	0.0034615	0.003311757
0.014261886	0.246793014	0.097497316	1122.261243	0.001061642	0.000976141
0.045352669	0.209536823	0.609249689	1146.689104	0.00321297	0.003073978
0.012356673	0.228185517	0.093450166	1044.098579	0.000920818	0.000846658
0.033426683	0.154435082	0.43966823	1101.32937	0.003001381	0.002871543
0.011304173	0.211729422	0.090829872	970.1249796	0.000842566	0.000774708
0.024638958	0.113829866	0.331551612	1062.942883	0.002817879	0.002695979
0.010914834	0.197083337	0.089667934	907.5066317	0.000813334	0.000747831
0.018164629	0.083908771	0.258914228	1029.796902	0.002656578	0.002541656
0.011136114	0.184237745	0.08969204	882.4931983	0.000828265	0.000761559
0.013395817	0.06186234	0.207838949	1002.132565	0.002513372	0.002404645

0.011956583	0.172278986	0.091606979	887.9759737	0.000889822	0.000818159
0.011506019	0.053121896	0.188039529	989.5309555	0.002447573	0.002341692
0.01337881	0.1596278	0.097352328	904.4369971	0.001008493	0.000927272
0.011506019	0.053121896	0.188823032	989.5309555	0.002447573	0.002341692
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0.374452655	1.828839317	12.72949465	2399.714323	0.007240083	0.006926881
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0.308097017	1.508952227	9.779658148	2144.127492	0.006572247	0.006287935
0.043258431	0.340194268	0.137148454	2156.350502	0.0032056	0.002947431
0.223341624	1.099285134	6.000730347	1824.526038	0.005743075	0.005494632
0.030417221	0.312747523	0.122063732	1516.094994	0.002244743	0.002063958
0.156333691	0.76512223	3.289271177	1568.407117	0.005026655	0.004809204
0.022456565	0.286964239	0.111420818	1323.872834	0.001658282	0.001524729
0.115269306	0.564748501	1.793834371	1451.835774	0.004588927	0.004390412
0.017503234	0.264206829	0.103199826	1216.585159	0.00129236	0.001188278
0.084947534	0.416192525	1.114478616	1374.687894	0.004225319	0.004042533
0.014400433	0.244047248	0.097020307	1123.203102	0.001062538	0.000976964
0.06231375	0.30505593	0.749976985	1310.65976	0.003912189	0.003742949
0.012476712	0.225646773	0.092992958	1044.97484	0.000921595	0.000847372
0.046327572	0.22714464	0.539621822	1266.017483	0.003672197	0.003513339
0.011413987	0.209373766	0.090385483	970.9391577	0.000843277	0.000775362
0.034038288	0.166803627	0.402889329	1221.837165	0.003438858	0.003290094
0.011020866	0.194890629	0.08922923	908.2682573	0.00081402	0.000748462
0.025062105	0.12279764	0.31165785	1184.905639	0.003235519	0.003095551
0.011244296	0.182187955	0.089253219	883.2338314	0.000828963	0.000762201
0.018293445	0.089483271	0.246735143	1147.730685	0.003037319	0.002905926
0.012072735	0.170362246	0.091158789	888.7212082	0.000890573	0.000818849
0.015874561	0.077798152	0.223111091	1139.256241	0.002971928	0.002843363
0.013508779	0.157851815	0.096876028	905.1960466	0.001009344	0.000928054
0.016936849	0.083909293	0.230143687	1176.392885	0.00308693	0.002953391
0.014592382	0.152231958	0.10024553	933.5982278	0.001096319	0.001008025
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0.053165123	0.31554691	0.146296302	1518.845544	0.003497823	0.003216119
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0.03528974	0.288147185	0.129171736	1046.943005	0.002321771	0.002134783
0.17703175	0.707804075	4.473444029	1593.935612	0.007618443	0.007288873
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0.126308381	0.5106619	2.686047672	1391.710803	0.006813472	0.006518724
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0.068709213	0.277607346	1.178177	1213.242049	0.005805373	0.005554235
0.011670881	0.205394048	0.092533749	545.3332517	0.000769581	0.000707601
0.050953089	0.205838229	0.916066587	1158.157589	0.005486453	0.005249111
0.010110223	0.189879142	0.088720579	507.3521668	0.000667498	0.00061374
0.03783359	0.153013472	0.755289335	1112.995684	0.005255377	0.005028031
0.009245277	0.176116418	0.086332668	471.406647	0.000610774	0.000561584
0.028142734	0.114175225	0.64949585	1075.024652	0.005099534	0.004878931
0.008944394	0.164247295	0.084892537	440.9789124	0.000589584	0.0005421
0.020990326	0.085669909	0.576194898	1042.496808	0.00501054	0.004793786
0.009013589	0.151704694	0.086924937	428.8242942	0.000600407	0.000552052
0.015720356	0.064805098	0.526034113	1014.231459	0.004982535	0.004766993
0.009706958	0.142273931	0.088230462	431.4885043	0.00064503	0.000593081
0.013634802	0.056595642	0.505643445	1001.427312	0.004990027	0.00477416
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0.268916325	1.959082833	0.802368145	3149.813977	0.004708844	0.004329608
7.497249864	30.46270622	2.631154619	2642.131438	0.025679059	0.024568194
0.178497506	1.788944089	0.708467536	2171.172523	0.003125618	0.002873891
3.684434738	15.21177813	1.75549419	2169.418943	0.016283782	0.015579353
0.124995738	1.638048014	0.635606157	1526.516117	0.002188735	0.002012461
1.469107264	6.255855039	1.266361225	1780.26625	0.009863572	0.009436879
0.092594651	1.507941559	0.576164912	1332.972686	0.001616907	0.001486687
0.911648484	3.908123194	1.124622903	1596.826471	0.007306262	0.006990196
0.072162964	1.388211712	0.533767957	1224.947553	0.001260115	0.001158629
0.6958309	3.004653931	1.057449951	1498.863104	0.005815876	0.005564283
0.059383607	1.282560947	0.501594185	1130.923619	0.001036027	0.000952588
0.553995035	2.414591298	1.013244502	1417.565655	0.004731607	0.00452692
0.051424765	1.185277066	0.481218284	1052.157642	0.0008986	0.00082623
0.457220841	2.0039436	0.984797828	1352.934124	0.004043939	0.003869
0.047072872	1.100441743	0.467205448	977.6130639	0.000822236	0.000756016
0.391513976	1.707872716	0.96686376	1304.96851	0.003747496	0.003585381
0.045440784	1.024086053	0.461475244	914.511385	0.00079371	0.000729787
0.349355228	1.491540947	0.958109223	1273.668815	0.00383899	0.003672917
0.046373613	0.957571912	0.461386712	889.3048809	0.00080828	0.000743184
0.326376506	1.334710267	0.956449439	1259.035037	0.004316285	0.004129564
0.049726405	0.894298407	0.472359321	894.8299761	0.000868353	0.000798418
0.331677499	1.279539997	0.967380297	1261.067177	0.005192065	0.004967458
0.05552169	0.826881584	0.503512466	911.4180569	0.00098416	0.000904899
0.36017578	1.302482662	0.991246663	1279.765235	0.006462546	0.006182979
0.060039237	0.798268243	0.519867232	940.0154651	0.001068965	0.000982874

0.398123204	1.344868374	1.016254514	1315.12921	0.008118337	0.007767141

Aggregate E
Speed
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75

Calculated		
CO RUNEX*VMT	VMT	CO_RUNEX
1242.094167	22.84688091	54.36602799
100207.046	7404.245148	13.53372883
340.2636501	6.890009811	49.38507484
164546.8996	6394.948884	25.73076072
800.7068019	17.81218699	44.95275074
62122.16034	7786.551994	7.978134659
2080.848481	50.3520665	41.32597975
133158.5987	85321.24507	1.560673412
7757.810453	204.5889178	37.91901603
89845.19191	56517.65858	1.589683546
16228.84101	464.8514472	34.9118866
121460.2251	127447.5426	0.953021318
17548.8435	544.1834222	32.24803032
132232.5971	150924.1446	0.876152702
15675.16168	525.7189376	29.81661979
87740.39324	152619.4793	0.574896426
21076.74588	761.8193784	27.66632942
73770.93672	195812.8076	0.376742143
31657.45777	1229.294103	25.75254994
73551.94692	319616.8756	0.230125355
32433.63174	1347.24519	24.07403789
57313.21454	357887.8844	0.16014293
39630.77045	1760.475065	22.51140685
76240.07597	554429.8852	0.137510762
17922.84593	859.2669603	20.85829754
70856.96864	515283.0777	0.137510762
4846.916211	240.9519237	20.11569834
23475.33813	170716.3701	0.137510762
0	0	0
38514.89242	59440.28679	0.647959398
2162.836965	811.8574226	2.664060098
14887.21763	25248.8731	0.589619092
687.7151713	344.8584479	1.994195519
44550.79342	84240.36873	0.528853257
1120.925253	1150.586115	0.974221085
130378.1155	266313.5436	0.489566222

1379.75612	3637.408882	0.379323899
718097.8227	1603428.397	0.447851506
4992.126946	21900.21811	0.227948732
1371050.407	3325981.397	0.412224316
7826.889114	45427.48413	0.172294136
1364572.053	3582503.494	0.380899015
6708.390254	48931.15781	0.137098539
1027363.139	2926718.87	0.35102898
4521.927185	39974.20886	0.113121118
940732.3669	2893322.772	0.325139102
3789.459017	39518.07259	0.095891798
1042503.691	3441257.079	0.302942694
3901.782797	47001.96203	0.08301319
832184.3106	2913684.536	0.285612358
2909.11496	39796.1811	0.073100355
965548.6213	3608319.845	0.267589533
3404.315686	49283.76708	0.069075801
614747.9048	2564217.741	0.239740914
2428.873934	35023.03435	0.069350757
128610.483	560058.8435	0.229637447
531.9701548	7649.490837	0.069543211
3196.017101	3941.333173	0.810897471
5.572485218	2.137813377	2.606628473
1230.253621	1674.188106	0.734835958
1.770546055	0.908094183	1.949738351
3671.980419	5585.763087	0.657382055
2.907232868	3.029766458	0.959556754
10714.69529	17658.56897	0.606770306
3.656131211	9.578161323	0.381715351
58912.64834	106319.2301	0.554110938
13.43952294	57.6684747	0.233048004
112338.6179	220537.3076	0.509386004
21.25828308	119.6213529	0.177713114
111723.6176	237546.6309	0.470322889
18.40625772	128.8473577	0.142853203
84111.97511	194063.2321	0.433425612
12.56871786	105.2615842	0.119404605
77049.37347	191848.8224	0.401615045
10.7186955	104.0604691	0.10300449
85455.03989	228180.9429	0.374505596
11.30926456	123.7673271	0.091375202
68287.42632	193198.9588	0.353456492
8.730404412	104.7927948	0.083311113
79389.17123	239258.447	0.331813452
10.62757465	129.7758616	0.081891767

50769.45778	170026.7107	0.298596953
7.936540645	92.223966	0.086057247
10643.88553	37136.06744	0.286618543
1.792173712	20.14292582	0.08897286
18193.18264	22408.19554	0.811898602
126.1501659	48.99418576	2.574798703
7031.368926	9518.488493	0.738706459
40.11339562	20.81160852	1.92745292
21048.17097	31757.49575	0.662778046
65.35701749	69.43587417	0.941257214
61577.92185	100396.6549	0.61334635
80.35818817	219.5113101	0.366077667
339169.5767	604471.1254	0.56110137
290.5000051	1321.640136	0.219802651
647547.8683	1253850.638	0.516447373
455.2416089	2741.469788	0.166057496
644460.8462	1350556.048	0.477181859
389.9691399	2952.910411	0.132062638
485248.7355	1103333.989	0.439802218
262.6785754	2412.374094	0.108887994
444352.2184	1090744.106	0.407384478
219.9132089	2384.847062	0.092212709
492424.7095	1297308.033	0.379574239
226.1141383	2836.486795	0.079716267
393010.1705	1098420.219	0.357795827
168.2403138	2401.630428	0.070052541
456010.9028	1360288.468	0.335231029
196.4004586	2974.189768	0.066034945
290661.0294	966675.8971	0.300680952
139.713564	2113.57931	0.066102825
60829.12918	211134.7162	0.288105766
30.53721124	461.6334896	0.066150338
205.5492083	487.4346488	0.421695932
2162.245861	627.6219558	3.445140567
54.13362121	141.2680581	0.383197886
418.6709506	163.2981167	2.563844329
153.6066877	441.0977737	0.348237277
1015.011084	766.1467263	1.324825976
360.012767	1123.069464	0.320561442
880.186169	1469.712142	0.598883376
1330.712878	4526.112811	0.29400789
2492.191353	6270.744281	0.397431508
2740.745837	10127.10049	0.270634802
4522.778256	14292.8077	0.316437354
2904.069247	11616.60724	0.249992893

4301.087228	16133.96976	0.2665858
2692.320354	11652.8899	0.231043147
4141.318813	17570.25228	0.235700589
3750.416786	17473.76925	0.214631241
5019.909607	23015.22308	0.218112577
5316.191739	26617.37534	0.199726369
7381.031648	34911.85003	0.211419092
4981.269389	26694.66973	0.186601649
7845.063754	36427.46443	0.215361236
6059.670791	34801.42936	0.174121319
14471.58326	61327.00882	0.23597406
3672.964028	22870.49896	0.160598334
20733.36566	75046.57358	0.276273315
1057.667694	6829.393298	0.154869935
7648.584574	25120.10233	0.30448063
38.6266919	168.8231149	0.228799782
985.313034	302.3729325	3.258601972
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191.6893044	78.67304509	2.436530888
28.86568258	152.7743264	0.188943282
444.1731933	369.1107843	1.203360108
67.65339719	388.9753952	0.173927189
342.369162	708.0714214	0.483523486
250.0668174	1567.620326	0.159520015
898.2864704	3021.09147	0.297338389
515.0394201	3507.523838	0.146838466
1567.482531	6885.925737	0.227635701
545.7310636	4023.414879	0.135638775
1428.692645	7772.952656	0.183803081
505.9393305	4035.981387	0.125357201
1307.801379	8464.918504	0.15449663
704.7762184	6052.044435	0.116452585
1488.795596	11088.17247	0.134268799
999.015769	9218.934736	0.108365641
2023.626106	16819.67684	0.120313019
936.077349	9245.705668	0.101244554
1951.74942	17549.86284	0.111211662
1138.729935	12053.48393	0.094473095
3278.005729	29545.85531	0.110946381
690.2213395	7921.203144	0.087135922
4284.024427	36155.6066	0.118488523
198.7563197	2365.36211	0.084027861
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42418.70503	1901.713112	22.30552272
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318654.4353	20899.34885	15.24709873
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372713.2535	18310.77171	20.35486321
90057.0583	3999.313109	22.51813145
12796.09518	11317.67104	1.130629715
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294.5586332	130.4801314	2.257497981
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480.0547067	435.3340577	1.1027272
43059.17787	50707.17595	0.849173259
590.7063499	1376.244636	0.429216096
236917.6121	305299.2526	0.776017662
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451987.3468	633280.3117	0.713723984
3349.561584	17187.87559	0.194879324
449635.9122	682123.1567	0.65917116
2870.421872	18513.52038	0.155044628
338534.07	557259.1116	0.607498492
1934.456206	15124.58244	0.127901462
310069.165	550900.3593	0.562840738
1620.638483	14951.9994	0.108389416
343784.8231	655229.2678	0.524678674
1667.983485	17783.59272	0.093793392
274576.9849	554777.3217	0.494931884
1242.867982	15057.22412	0.082542969
318972.3156	687038.6942	0.464271253
1453.390479	18646.9331	0.077942602
203755.849	488237.4302	0.417329431
1036.05043	13251.26339	0.07818503
42690.01854	106637.4692	0.400328504
226.7781425	2894.25002	0.078354717
42.86976779	63.12306239	0.679145881
36.71100515	16.51953002	2.22227903
11.74389516	19.03623173	0.616923314
8.027674108	4.723837153	1.699396878
27.63567818	49.21283546	0.561554276

11.7186875	13.05159282	0.897874127
71.81862177	139.1164356	0.516248289
14.76249026	34.98164236	0.42200678
267.7538802	565.2534836	0.473688156
42.40944187	145.625331	0.291222973
560.1239135	1284.326164	0.436122793
80.00029279	337.0367742	0.237363691
605.6826173	1503.510446	0.402845633
79.95715645	398.9734469	0.200407213
541.0141672	1452.495395	0.372472208
67.72181694	388.5016771	0.174315379
727.4450084	2104.811258	0.345610565
80.37312465	514.6635278	0.15616635
1092.628804	3396.385207	0.32170344
124.2528835	860.5353279	0.144390218
1119.417753	3722.269246	0.300735299
141.7337629	1026.49847	0.138074987
1367.82055	4863.97149	0.281214755
207.1369914	1488.903835	0.139120463
618.5909761	2374.046688	0.260563947
138.1650291	943.3279966	0.146465524
167.2869723	665.7199017	0.251287323
44.87472106	285.1653738	0.15736385
70.85637581	170.3027503	0.416061254
2568.856026	2013.673904	1.275706071
19.41064511	51.35876643	0.377942199
594.9360596	575.8195051	1.033198866
45.67703769	132.7736791	0.344021782
1157.638767	1590.944284	0.727642557
118.7038679	375.3289318	0.316266234
2244.547401	4264.141913	0.526377275
442.5512555	1525.024598	0.290192864
6847.895362	17751.22709	0.385770253
925.7887915	3465.045415	0.267179411
11680.42243	41083.62381	0.284308475
1001.089517	4056.393248	0.246793014
10190.50725	48633.49123	0.209536823
894.2036573	3918.757282	0.228185517
7313.585052	47357.01849	0.154435082
1202.341873	5678.67167	0.211729422
7141.197965	62735.71427	0.113829866
1805.928073	9163.271233	0.197083337
8801.719385	104896.2974	0.083908771
1850.205613	10042.48948	0.184237745
7740.626384	125126.6336	0.06186234

2260.772846	13122.74295	0.172278986
9641.212873	181492.2576	0.053121896
1022.424821	6405.054902	0.1596278
6108.40392	114988.439	0.053121896
276.4966826	1796.077786	0.153944715
1846.553154	34760.67846	0.053121896
0	0	0
36.89342859	89.67072734	0.411432244
114.0219502	62.34662013	1.828839317
10.10671575	27.04229928	0.373737294
27.72764136	18.37542691	1.508952227
23.7830754	69.91027657	0.340194268
59.2055729	53.85824938	1.099285134
61.80661409	197.6246318	0.312747523
103.2927177	135.0015901	0.76512223
230.4271557	802.9821286	0.286964239
321.189789	568.7306622	0.564748501
482.0388043	1824.47519	0.264206829
547.85411	1316.347787	0.416192525
521.2463128	2135.841801	0.244047248
471.1074968	1544.331549	0.30505593
465.5930874	2063.37135	0.225646773
347.5624345	1530.137072	0.22714464
626.0341927	2990.031683	0.209373766
336.1174234	2015.048655	0.166803627
940.3088663	4824.802858	0.194890629
413.0284626	3363.4886	0.12279764
963.3632526	5287.74394	0.182187955
352.4181858	3938.369511	0.089483271
1177.136999	6909.611872	0.170362246
453.8756277	5834.015506	0.077798152
532.355158	3372.499451	0.157851815
357.4996456	4260.548908	0.083909293
143.9660228	945.701706	0.152231958
114.4450417	1339.379305	0.085446327
0	0	0
39.16865978	113.2539453	0.345848082
394.6111686	316.7553962	1.245791464
125.2561168	396.9492736	0.31554691
1119.411357	1110.211428	1.008286645
228.7596318	793.8985472	0.288147185
1571.624347	2220.422857	0.707804075
284.3646593	1077.588157	0.263889926
1539.064951	3013.862894	0.5106619
411.9988294	1701.045321	0.242203323

1784.325395	4757.585115	0.375048549
454.9093602	2040.807157	0.222906588
1584.541449	5707.851304	0.277607346
430.2249058	2094.631805	0.205394048
1205.880887	5858.391293	0.205838229
268.4866772	1413.987203	0.189879142
605.1260245	3954.723832	0.153013472
119.4768535	678.3970234	0.176116418
216.6339369	1897.381299	0.114175225
55.80496248	339.761836	0.164247295
81.40921773	950.2661885	0.085669909
76.71915447	505.7137808	0.151704694
91.66101103	1414.410496	0.064805098
40.04349136	281.4534686	0.142273931
44.55128914	787.1858652	0.056595642
0	0	0
0	0	0
0	0	0
673.5653201	313.063322	2.15153061
12033.69645	297.5044327	40.44879713
1904.635966	972.2079812	1.959082833
28144.20049	923.8903559	30.46270622
3041.703095	1700.278457	1.788944089
24578.83457	1615.776561	15.21177813
26317.44507	16066.34534	1.638048014
95513.55859	15267.86634	6.255855039
125.5629476	83.26778103	1.507941559
309.2477072	79.1294675	3.908123194
259.9995901	187.2910219	1.388211712
534.7769367	177.9828722	3.004653931
275.569813	214.8590393	1.282560947
493.0131603	204.1807906	2.414591298
256.6495542	216.5312749	1.185277066
412.3513104	205.7699181	2.0039436
349.6281962	317.7162247	1.100441743
515.6513339	301.9260915	1.707872716
502.0860522	490.2772096	1.024086053
694.9253231	465.9109927	1.491540947
479.1386133	500.3682828	0.957571912
634.6554676	475.5005511	1.334710267
602.5801836	673.8021437	0.894298407
819.308586	640.3149474	1.279539997
398.8458921	482.3494682	0.826881584
597.0284219	458.377251	1.302482662
118.4576509	148.3932901	0.798268243

189.6510697	141.0183132	1.344868374

Aggregate Emission Factors by Speed.

CO RUNEX*VMT	VMT	CO_RUNEX
214730.44	111171.6635	1.931521336
232517.8235	52860.01618	4.398746734
197031.359	157656.8919	1.249747833
553362.126	571853.683	0.967663832
1696535.568	2762621.243	0.61410357
3172604.75	5743027.08	0.552427266
3165332.046	6206497.872	0.510002921
2383879.214	5117261.513	0.465850574
2202454.219	5137874.108	0.428670336
2474382.623	6251459.74	0.395808775
2017382.514	5439439.966	0.370880555
2425060.803	6901719.098	0.351370545
1664193.773	5049369.522	0.329584469
375248.5134	1187448.492	0.316012455
0	0	N/A

EMFAC2014 (v1.0.7) Emission Rates
Region Type: Sub-Area
Region: Riverside (SC)
Calendar Year: 2040
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, g/mile for RUNEX, PMBW and PMTW

Region	CalYr	VehClass	MdlYr	Speed	Fuel	VMT	ROG_RUNEX
Riverside (SC)	2040	HHDT	Aggregated	5	GAS	24.66122484	2.107620082
Riverside (SC)	2040	HHDT	Aggregated	5	DSL	7976.377939	0.478651415
Riverside (SC)	2040	HHDT	Aggregated	10	GAS	7.437167539	1.322652736
Riverside (SC)	2040	HHDT	Aggregated	10	DSL	6757.167993	0.268708787
Riverside (SC)	2040	HHDT	Aggregated	15	GAS	19.22670976	0.875053873
Riverside (SC)	2040	HHDT	Aggregated	15	DSL	8384.224202	0.268771821
Riverside (SC)	2040	HHDT	Aggregated	20	GAS	54.35068524	0.615295254
Riverside (SC)	2040	HHDT	Aggregated	20	DSL	92025.68099	0.198555072
Riverside (SC)	2040	HHDT	Aggregated	25	GAS	220.8359785	0.454262985
Riverside (SC)	2040	HHDT	Aggregated	25	DSL	61413.97353	0.163610481
Riverside (SC)	2040	HHDT	Aggregated	30	GAS	501.7667883	0.354064461
Riverside (SC)	2040	HHDT	Aggregated	30	DSL	138630.1488	0.122385533
Riverside (SC)	2040	HHDT	Aggregated	35	GAS	587.3987693	0.29129939
Riverside (SC)	2040	HHDT	Aggregated	35	DSL	163986.0405	0.08880828
Riverside (SC)	2040	HHDT	Aggregated	40	GAS	567.4679608	0.252385361
Riverside (SC)	2040	HHDT	Aggregated	40	DSL	165929.1591	0.066040173
Riverside (SC)	2040	HHDT	Aggregated	45	GAS	822.3178932	0.230888029
Riverside (SC)	2040	HHDT	Aggregated	45	DSL	213005.9685	0.049057587
Riverside (SC)	2040	HHDT	Aggregated	50	GAS	1326.916281	0.222935759
Riverside (SC)	2040	HHDT	Aggregated	50	DSL	347942.018	0.036531682
Riverside (SC)	2040	HHDT	Aggregated	55	GAS	1454.234242	0.227455415
Riverside (SC)	2040	HHDT	Aggregated	55	DSL	389684.0446	0.027002106
Riverside (SC)	2040	HHDT	Aggregated	60	GAS	1900.280024	0.244213517
Riverside (SC)	2040	HHDT	Aggregated	60	DSL	603687.606	0.023185872
Riverside (SC)	2040	HHDT	Aggregated	65	GAS	927.5040995	0.273262548
Riverside (SC)	2040	HHDT	Aggregated	65	DSL	561062.8428	0.023185872
Riverside (SC)	2040	HHDT	Aggregated	70	GAS	260.086687	0.29518223
Riverside (SC)	2040	HHDT	Aggregated	70	DSL	185883.4805	0.023185872
Riverside (SC)	2040	HHDT	Aggregated	75	DSL	0	0
Riverside (SC)	2040	LDA	Aggregated	5	GAS	63342.8147	0.026390875
Riverside (SC)	2040	LDA	Aggregated	5	DSL	877.192368	0.079970934
Riverside (SC)	2040	LDA	Aggregated	10	GAS	26906.57762	0.016613255
Riverside (SC)	2040	LDA	Aggregated	10	DSL	372.611237	0.059856931
Riverside (SC)	2040	LDA	Aggregated	15	GAS	89771.13597	0.010885189
Riverside (SC)	2040	LDA	Aggregated	15	DSL	1243.180552	0.029254981
Riverside (SC)	2040	LDA	Aggregated	20	GAS	283798.2513	0.007687341

Riverside (SC)	2040	LDA	Aggregated	20	DSL	3930.132585	0.011405428
Riverside (SC)	2040	LDA	Aggregated	25	GAS	1708700.837	0.005664717
Riverside (SC)	2040	LDA	Aggregated	25	DSL	23662.65757	0.006858962
Riverside (SC)	2040	LDA	Aggregated	30	GAS	3544347.356	0.004415036
Riverside (SC)	2040	LDA	Aggregated	30	DSL	49083.30116	0.005185103
Riverside (SC)	2040	LDA	Aggregated	35	GAS	3817711.308	0.003632834
Riverside (SC)	2040	LDA	Aggregated	35	DSL	52868.9361	0.004126228
Riverside (SC)	2040	LDA	Aggregated	40	GAS	3118871.411	0.003140962
Riverside (SC)	2040	LDA	Aggregated	40	DSL	43191.16874	0.003404704
Riverside (SC)	2040	LDA	Aggregated	45	GAS	3083282.705	0.002869997
Riverside (SC)	2040	LDA	Aggregated	45	DSL	42698.3245	0.002886126
Riverside (SC)	2040	LDA	Aggregated	50	GAS	3667191.416	0.002772081
Riverside (SC)	2040	LDA	Aggregated	50	DSL	50784.48657	0.002498322
Riverside (SC)	2040	LDA	Aggregated	55	GAS	3104981.313	0.002843468
Riverside (SC)	2040	LDA	Aggregated	55	DSL	42998.81404	0.002199495
Riverside (SC)	2040	LDA	Aggregated	60	GAS	3845222.621	0.003056619
Riverside (SC)	2040	LDA	Aggregated	60	DSL	53249.9219	0.002076947
Riverside (SC)	2040	LDA	Aggregated	65	GAS	2732570.416	0.0033486
Riverside (SC)	2040	LDA	Aggregated	65	DSL	37841.54407	0.002082535
Riverside (SC)	2040	LDA	Aggregated	70	GAS	596829.2796	0.003604216
Riverside (SC)	2040	LDA	Aggregated	70	DSL	8265.09039	0.002086431
Riverside (SC)	2040	LDT1	Aggregated	5	GAS	4219.513896	0.031839461
Riverside (SC)	2040	LDT1	Aggregated	5	DSL	2.321677684	0.263205211
Riverside (SC)	2040	LDT1	Aggregated	10	GAS	1792.352909	0.020085065
Riverside (SC)	2040	LDT1	Aggregated	10	DSL	0.986195532	0.196915678
Riverside (SC)	2040	LDT1	Aggregated	15	GAS	5980.008268	0.013189241
Riverside (SC)	2040	LDT1	Aggregated	15	DSL	3.290343885	0.096526299
Riverside (SC)	2040	LDT1	Aggregated	20	GAS	18904.91716	0.009329775
Riverside (SC)	2040	LDT1	Aggregated	20	DSL	10.40193856	0.037953514
Riverside (SC)	2040	LDT1	Aggregated	25	GAS	113823.2799	0.006885617
Riverside (SC)	2040	LDT1	Aggregated	25	DSL	62.62829685	0.022953567
Riverside (SC)	2040	LDT1	Aggregated	30	GAS	236102.9107	0.00537261
Riverside (SC)	2040	LDT1	Aggregated	30	DSL	129.9094807	0.017393355
Riverside (SC)	2040	LDT1	Aggregated	35	GAS	254312.7581	0.004423712
Riverside (SC)	2040	LDT1	Aggregated	35	DSL	139.9289752	0.013875446
Riverside (SC)	2040	LDT1	Aggregated	40	GAS	207760.2853	0.003825765
Riverside (SC)	2040	LDT1	Aggregated	40	DSL	114.3146888	0.011483203
Riverside (SC)	2040	LDT1	Aggregated	45	GAS	205389.5817	0.003494812
Riverside (SC)	2040	LDT1	Aggregated	45	DSL	113.0102709	0.009772267
Riverside (SC)	2040	LDT1	Aggregated	50	GAS	244286.0364	0.003372979
Riverside (SC)	2040	LDT1	Aggregated	50	DSL	134.4120326	0.008504492
Riverside (SC)	2040	LDT1	Aggregated	55	GAS	206835.0113	0.003455282
Riverside (SC)	2040	LDT1	Aggregated	55	DSL	113.8055809	0.007543247
Riverside (SC)	2040	LDT1	Aggregated	60	GAS	256145.3948	0.00370851
Riverside (SC)	2040	LDT1	Aggregated	60	DSL	140.9373358	0.007176261

Riverside (SC)	2040	LDT1	Aggregated	65	GAS	182027.2575	0.004057872
Riverside (SC)	2040	LDT1	Aggregated	65	DSL	100.1557601	0.007251106
Riverside (SC)	2040	LDT1	Aggregated	70	GAS	39757.14453	0.004364046
Riverside (SC)	2040	LDT1	Aggregated	70	DSL	21.87533387	0.007303289
Riverside (SC)	2040	LDT2	Aggregated	5	GAS	24118.66696	0.033286234
Riverside (SC)	2040	LDT2	Aggregated	5	DSL	52.93494697	0.261306142
Riverside (SC)	2040	LDT2	Aggregated	10	GAS	10245.05759	0.020961803
Riverside (SC)	2040	LDT2	Aggregated	10	DSL	22.48555367	0.195610837
Riverside (SC)	2040	LDT2	Aggregated	15	GAS	34181.62172	0.01374208
Riverside (SC)	2040	LDT2	Aggregated	15	DSL	75.02082665	0.095516869
Riverside (SC)	2040	LDT2	Aggregated	20	GAS	108060.1729	0.009706879
Riverside (SC)	2040	LDT2	Aggregated	20	DSL	237.1673165	0.037139305
Riverside (SC)	2040	LDT2	Aggregated	25	GAS	650611.8591	0.007155128
Riverside (SC)	2040	LDT2	Aggregated	25	DSL	1427.943937	0.022294871
Riverside (SC)	2040	LDT2	Aggregated	30	GAS	1349560.071	0.005577793
Riverside (SC)	2040	LDT2	Aggregated	30	DSL	2961.975091	0.016841278
Riverside (SC)	2040	LDT2	Aggregated	35	GAS	1453647.237	0.004590108
Riverside (SC)	2040	LDT2	Aggregated	35	DSL	3190.422569	0.01339153
Riverside (SC)	2040	LDT2	Aggregated	40	GAS	1187554.124	0.003968967
Riverside (SC)	2040	LDT2	Aggregated	40	DSL	2606.409164	0.011039344
Riverside (SC)	2040	LDT2	Aggregated	45	GAS	1174003.224	0.003626456
Riverside (SC)	2040	LDT2	Aggregated	45	DSL	2576.668044	0.009346164
Riverside (SC)	2040	LDT2	Aggregated	50	GAS	1396334.673	0.003502209
Riverside (SC)	2040	LDT2	Aggregated	50	DSL	3064.634624	0.00807636
Riverside (SC)	2040	LDT2	Aggregated	55	GAS	1182265.274	0.003591224
Riverside (SC)	2040	LDT2	Aggregated	55	DSL	2594.80135	0.007093069
Riverside (SC)	2040	LDT2	Aggregated	60	GAS	1464122.556	0.003859305
Riverside (SC)	2040	LDT2	Aggregated	60	DSL	3213.413494	0.006681431
Riverside (SC)	2040	LDT2	Aggregated	65	GAS	1040464.591	0.004228761
Riverside (SC)	2040	LDT2	Aggregated	65	DSL	2283.581346	0.006682276
Riverside (SC)	2040	LDT2	Aggregated	70	GAS	227251.1365	0.004551389
Riverside (SC)	2040	LDT2	Aggregated	70	DSL	498.7641679	0.006682865
Riverside (SC)	2040	LHDT1	Aggregated	5	GAS	481.3057991	0.027434437
Riverside (SC)	2040	LHDT1	Aggregated	5	DSL	647.2387202	0.757769902
Riverside (SC)	2040	LHDT1	Aggregated	10	GAS	139.4917981	0.017222985
Riverside (SC)	2040	LHDT1	Aggregated	10	DSL	168.4021139	0.565051807
Riverside (SC)	2040	LHDT1	Aggregated	15	GAS	435.5515493	0.011375355
Riverside (SC)	2040	LHDT1	Aggregated	15	DSL	790.0931796	0.282948102
Riverside (SC)	2040	LHDT1	Aggregated	20	GAS	1108.948343	0.008009447
Riverside (SC)	2040	LHDT1	Aggregated	20	DSL	1515.649026	0.117984244
Riverside (SC)	2040	LHDT1	Aggregated	25	GAS	4469.202895	0.00591064
Riverside (SC)	2040	LHDT1	Aggregated	25	DSL	6466.740791	0.074036609
Riverside (SC)	2040	LHDT1	Aggregated	30	GAS	9999.765523	0.00460591
Riverside (SC)	2040	LHDT1	Aggregated	30	DSL	14739.53943	0.056956082
Riverside (SC)	2040	LHDT1	Aggregated	35	GAS	11470.54368	0.003789552

Riverside (SC)	2040	LHDT1	Aggregated	35	DSL	16638.2483	0.046137987
Riverside (SC)	2040	LHDT1	Aggregated	40	GAS	11506.37013	0.003281831
Riverside (SC)	2040	LHDT1	Aggregated	40	DSL	18119.42284	0.038883028
Riverside (SC)	2040	LHDT1	Aggregated	45	GAS	17254.05958	0.003005897
Riverside (SC)	2040	LHDT1	Aggregated	45	DSL	23734.58002	0.033869953
Riverside (SC)	2040	LHDT1	Aggregated	50	GAS	26282.69685	0.002901505
Riverside (SC)	2040	LHDT1	Aggregated	50	DSL	36003.04439	0.030400274
Riverside (SC)	2040	LHDT1	Aggregated	55	GAS	26359.01937	0.002958599
Riverside (SC)	2040	LHDT1	Aggregated	55	DSL	37566.03038	0.028100292
Riverside (SC)	2040	LHDT1	Aggregated	60	GAS	34363.84715	0.003169678
Riverside (SC)	2040	LHDT1	Aggregated	60	DSL	63243.82749	0.02780665
Riverside (SC)	2040	LHDT1	Aggregated	65	GAS	22582.93251	0.003529986
Riverside (SC)	2040	LHDT1	Aggregated	65	DSL	77392.20687	0.029206993
Riverside (SC)	2040	LHDT1	Aggregated	70	GAS	6743.522659	0.003812842
Riverside (SC)	2040	LHDT1	Aggregated	70	DSL	25905.24874	0.030183338
Riverside (SC)	2040	LHDT2	Aggregated	5	GAS	180.3604496	0.021560184
Riverside (SC)	2040	LHDT2	Aggregated	5	DSL	321.7758382	0.741944149
Riverside (SC)	2040	LHDT2	Aggregated	10	GAS	52.27197235	0.013535205
Riverside (SC)	2040	LHDT2	Aggregated	10	DSL	83.72139933	0.555188174
Riverside (SC)	2040	LHDT2	Aggregated	15	GAS	163.2148904	0.008939668
Riverside (SC)	2040	LHDT2	Aggregated	15	DSL	392.7961773	0.271809117
Riverside (SC)	2040	LHDT2	Aggregated	20	GAS	415.5578886	0.006294467
Riverside (SC)	2040	LHDT2	Aggregated	20	DSL	753.507509	0.106490873
Riverside (SC)	2040	LHDT2	Aggregated	25	GAS	1674.751156	0.004645055
Riverside (SC)	2040	LHDT2	Aggregated	25	DSL	3214.951259	0.064251174
Riverside (SC)	2040	LHDT2	Aggregated	30	GAS	3747.22725	0.003619694
Riverside (SC)	2040	LHDT2	Aggregated	30	DSL	7327.787271	0.048638586
Riverside (SC)	2040	LHDT2	Aggregated	35	GAS	4298.374172	0.002978134
Riverside (SC)	2040	LHDT2	Aggregated	35	DSL	8271.733635	0.03876125
Riverside (SC)	2040	LHDT2	Aggregated	40	GAS	4311.799473	0.002579126
Riverside (SC)	2040	LHDT2	Aggregated	40	DSL	9008.102096	0.03203871
Riverside (SC)	2040	LHDT2	Aggregated	45	GAS	6465.639828	0.002362276
Riverside (SC)	2040	LHDT2	Aggregated	45	DSL	11799.6871	0.027220747
Riverside (SC)	2040	LHDT2	Aggregated	50	GAS	9848.95472	0.002280236
Riverside (SC)	2040	LHDT2	Aggregated	50	DSL	17898.97518	0.02363679
Riverside (SC)	2040	LHDT2	Aggregated	55	GAS	9877.555172	0.002325104
Riverside (SC)	2040	LHDT2	Aggregated	55	DSL	18676.01634	0.020900577
Riverside (SC)	2040	LHDT2	Aggregated	60	GAS	12877.21639	0.002490988
Riverside (SC)	2040	LHDT2	Aggregated	60	DSL	31441.77715	0.019822708
Riverside (SC)	2040	LHDT2	Aggregated	65	GAS	8462.536435	0.002774147
Riverside (SC)	2040	LHDT2	Aggregated	65	DSL	38475.66819	0.019966318
Riverside (SC)	2040	LHDT2	Aggregated	70	GAS	2527.010439	0.002996438
Riverside (SC)	2040	LHDT2	Aggregated	70	DSL	12878.83878	0.020066446
Riverside (SC)	2040	MCY	Aggregated	5	GAS	454.9119253	12.45220979
Riverside (SC)	2040	MCY	Aggregated	10	GAS	193.2361719	8.046560869

Riverside (SC)	2040	MCY	Aggregated	15	GAS	644.7133821	5.510670437
Riverside (SC)	2040	MCY	Aggregated	20	GAS	2038.166594	3.951863293
Riverside (SC)	2040	MCY	Aggregated	25	GAS	12271.45323	2.997259724
Riverside (SC)	2040	MCY	Aggregated	30	GAS	25454.59793	2.39189007
Riverside (SC)	2040	MCY	Aggregated	35	GAS	27417.82805	2.00938059
Riverside (SC)	2040	MCY	Aggregated	40	GAS	22398.9383	1.779664151
Riverside (SC)	2040	MCY	Aggregated	45	GAS	22143.3493	1.65685244
Riverside (SC)	2040	MCY	Aggregated	50	GAS	26336.83261	1.62229291
Riverside (SC)	2040	MCY	Aggregated	55	GAS	22299.18316	1.666334814
Riverside (SC)	2040	MCY	Aggregated	60	GAS	27615.40727	1.804988708
Riverside (SC)	2040	MCY	Aggregated	65	GAS	19624.62317	2.085613443
Riverside (SC)	2040	MCY	Aggregated	70	GAS	4286.27553	2.276777639
Riverside (SC)	2040	MDV	Aggregated	5	GAS	12121.54034	0.051523418
Riverside (SC)	2040	MDV	Aggregated	5	DSL	336.4619027	0.093243672
Riverside (SC)	2040	MDV	Aggregated	10	GAS	5148.952848	0.032555438
Riverside (SC)	2040	MDV	Aggregated	10	DSL	142.9213139	0.069797239
Riverside (SC)	2040	MDV	Aggregated	15	GAS	17178.97209	0.021412908
Riverside (SC)	2040	MDV	Aggregated	15	DSL	476.842833	0.034094537
Riverside (SC)	2040	MDV	Aggregated	20	GAS	54308.79521	0.015167377
Riverside (SC)	2040	MDV	Aggregated	20	DSL	1507.468527	0.013270966
Riverside (SC)	2040	MDV	Aggregated	25	GAS	326983.9875	0.011207063
Riverside (SC)	2040	MDV	Aggregated	25	DSL	9076.210736	0.007972323
Riverside (SC)	2040	MDV	Aggregated	30	GAS	678260.8204	0.008752067
Riverside (SC)	2040	MDV	Aggregated	30	DSL	18826.72661	0.006024029
Riverside (SC)	2040	MDV	Aggregated	35	GAS	730572.8653	0.007210063
Riverside (SC)	2040	MDV	Aggregated	35	DSL	20278.77063	0.004791584
Riverside (SC)	2040	MDV	Aggregated	40	GAS	596840.0015	0.006236587
Riverside (SC)	2040	MDV	Aggregated	40	DSL	16566.70001	0.003951465
Riverside (SC)	2040	MDV	Aggregated	45	GAS	590029.6011	0.005695872
Riverside (SC)	2040	MDV	Aggregated	45	DSL	16377.66131	0.003347093
Riverside (SC)	2040	MDV	Aggregated	50	GAS	701768.7627	0.005494068
Riverside (SC)	2040	MDV	Aggregated	50	DSL	19479.24492	0.002894358
Riverside (SC)	2040	MDV	Aggregated	55	GAS	594181.9355	0.005622732
Riverside (SC)	2040	MDV	Aggregated	55	DSL	16492.91913	0.002544465
Riverside (SC)	2040	MDV	Aggregated	60	GAS	735837.5427	0.00602754
Riverside (SC)	2040	MDV	Aggregated	60	DSL	20424.90415	0.002399178
Riverside (SC)	2040	MDV	Aggregated	65	GAS	522915.8618	0.006587275
Riverside (SC)	2040	MDV	Aggregated	65	DSL	14514.7614	0.002401967
Riverside (SC)	2040	MDV	Aggregated	70	GAS	114211.6943	0.007079206
Riverside (SC)	2040	MDV	Aggregated	70	DSL	3170.214585	0.002403911
Riverside (SC)	2040	MH	Aggregated	5	GAS	64.10158232	0.070649777
Riverside (SC)	2040	MH	Aggregated	5	DSL	16.48827301	0.793400652
Riverside (SC)	2040	MH	Aggregated	10	GAS	19.33132723	0.044336795
Riverside (SC)	2040	MH	Aggregated	10	DSL	4.714899064	0.594452198
Riverside (SC)	2040	MH	Aggregated	15	GAS	49.97572209	0.029332782

Riverside (SC)	2040	MH	Aggregated	15	DSL	13.02689758	0.291989767
Riverside (SC)	2040	MH	Aggregated	20	GAS	141.2729882	0.020625383
Riverside (SC)	2040	MH	Aggregated	20	DSL	34.91545273	0.116773304
Riverside (SC)	2040	MH	Aggregated	25	GAS	574.0159196	0.015227402
Riverside (SC)	2040	MH	Aggregated	25	DSL	145.3497897	0.073022041
Riverside (SC)	2040	MH	Aggregated	30	GAS	1304.235507	0.011868636
Riverside (SC)	2040	MH	Aggregated	30	DSL	336.3990586	0.056303771
Riverside (SC)	2040	MH	Aggregated	35	GAS	1526.817537	0.009764681
Riverside (SC)	2040	MH	Aggregated	35	DSL	398.2185394	0.04528885
Riverside (SC)	2040	MH	Aggregated	40	GAS	1475.011661	0.008460239
Riverside (SC)	2040	MH	Aggregated	40	DSL	387.7665834	0.037637853
Riverside (SC)	2040	MH	Aggregated	45	GAS	2137.439583	0.007739624
Riverside (SC)	2040	MH	Aggregated	45	DSL	513.6897203	0.032218744
Riverside (SC)	2040	MH	Aggregated	50	GAS	3449.035229	0.007473055
Riverside (SC)	2040	MH	Aggregated	50	DSL	858.9070878	0.028423276
Riverside (SC)	2040	MH	Aggregated	55	GAS	3779.971051	0.007624559
Riverside (SC)	2040	MH	Aggregated	55	DSL	1024.556207	0.025898105
Riverside (SC)	2040	MH	Aggregated	60	GAS	4939.371714	0.00818631
Riverside (SC)	2040	MH	Aggregated	60	DSL	1486.086644	0.025379293
Riverside (SC)	2040	MH	Aggregated	65	GAS	2410.848641	0.009160065
Riverside (SC)	2040	MH	Aggregated	65	DSL	941.5431024	0.026455718
Riverside (SC)	2040	MH	Aggregated	70	GAS	676.0397463	0.009894838
Riverside (SC)	2040	MH	Aggregated	70	DSL	284.6258053	0.028063346
Riverside (SC)	2040	MHDT	Aggregated	5	GAS	184.1433156	0.063670802
Riverside (SC)	2040	MHDT	Aggregated	5	DSL	2116.029921	0.238512569
Riverside (SC)	2040	MHDT	Aggregated	10	GAS	55.53271171	0.039957088
Riverside (SC)	2040	MHDT	Aggregated	10	DSL	605.0886886	0.193159888
Riverside (SC)	2040	MHDT	Aggregated	15	GAS	143.5642433	0.026435211
Riverside (SC)	2040	MHDT	Aggregated	15	DSL	1671.812751	0.136011357
Riverside (SC)	2040	MHDT	Aggregated	20	GAS	405.8320481	0.018587953
Riverside (SC)	2040	MHDT	Aggregated	20	DSL	4480.890305	0.098375254
Riverside (SC)	2040	MHDT	Aggregated	25	GAS	1648.963891	0.013723198
Riverside (SC)	2040	MHDT	Aggregated	25	DSL	18653.53054	0.072093778
Riverside (SC)	2040	MHDT	Aggregated	30	GAS	3746.650892	0.01069622
Riverside (SC)	2040	MHDT	Aggregated	30	DSL	43171.92424	0.053129924
Riverside (SC)	2040	MHDT	Aggregated	35	GAS	4386.057775	0.008800099
Riverside (SC)	2040	MHDT	Aggregated	35	DSL	51105.55507	0.039154701
Riverside (SC)	2040	MHDT	Aggregated	40	GAS	4237.236085	0.007624514
Riverside (SC)	2040	MHDT	Aggregated	40	DSL	49764.19861	0.028855965
Riverside (SC)	2040	MHDT	Aggregated	45	GAS	6140.179343	0.006975083
Riverside (SC)	2040	MHDT	Aggregated	45	DSL	65924.60092	0.021266757
Riverside (SC)	2040	MHDT	Aggregated	50	GAS	9907.973557	0.006734847
Riverside (SC)	2040	MHDT	Aggregated	50	DSL	110228.2268	0.015674497
Riverside (SC)	2040	MHDT	Aggregated	55	GAS	10858.64618	0.006871385
Riverside (SC)	2040	MHDT	Aggregated	55	DSL	131486.8809	0.011554058

Riverside (SC)	2040	MHDT	Aggregated	60	GAS	14189.23295	0.007377644
Riverside (SC)	2040	MHDT	Aggregated	60	DSL	190717.5967	0.009920524
Riverside (SC)	2040	MHDT	Aggregated	65	GAS	6925.596	0.00825521
Riverside (SC)	2040	MHDT	Aggregated	65	DSL	120833.3569	0.009920524
Riverside (SC)	2040	MHDT	Aggregated	70	GAS	1942.045669	0.008917399
Riverside (SC)	2040	MHDT	Aggregated	70	DSL	36527.58054	0.009920524
Riverside (SC)	2040	MHDT	Aggregated	75	DSL	0	0
Riverside (SC)	2040	OBUS	Aggregated	5	GAS	96.67378623	0.067675293
Riverside (SC)	2040	OBUS	Aggregated	5	DSL	66.19256779	0.329192179
Riverside (SC)	2040	OBUS	Aggregated	10	GAS	29.15423503	0.042470136
Riverside (SC)	2040	OBUS	Aggregated	10	DSL	19.50823285	0.271182215
Riverside (SC)	2040	OBUS	Aggregated	15	GAS	75.37009382	0.028097819
Riverside (SC)	2040	OBUS	Aggregated	15	DSL	57.17460355	0.19700371
Riverside (SC)	2040	OBUS	Aggregated	20	GAS	213.0586198	0.019757018
Riverside (SC)	2040	OBUS	Aggregated	20	DSL	143.3255052	0.137560164
Riverside (SC)	2040	OBUS	Aggregated	25	GAS	865.6930188	0.014586301
Riverside (SC)	2040	OBUS	Aggregated	25	DSL	603.7888515	0.101473722
Riverside (SC)	2040	OBUS	Aggregated	30	GAS	1966.962126	0.011368945
Riverside (SC)	2040	OBUS	Aggregated	30	DSL	1397.491151	0.074781056
Riverside (SC)	2040	OBUS	Aggregated	35	GAS	2302.645689	0.00935357
Riverside (SC)	2040	OBUS	Aggregated	35	DSL	1639.545942	0.054837114
Riverside (SC)	2040	OBUS	Aggregated	40	GAS	2224.515477	0.008104048
Riverside (SC)	2040	OBUS	Aggregated	40	DSL	1624.442957	0.040796066
Riverside (SC)	2040	OBUS	Aggregated	45	GAS	3223.545657	0.007413772
Riverside (SC)	2040	OBUS	Aggregated	45	DSL	2139.255679	0.029967411
Riverside (SC)	2040	OBUS	Aggregated	50	GAS	5201.60786	0.007158426
Riverside (SC)	2040	OBUS	Aggregated	50	DSL	3570.820269	0.02206332
Riverside (SC)	2040	OBUS	Aggregated	55	GAS	5700.703478	0.007303552
Riverside (SC)	2040	OBUS	Aggregated	55	DSL	4181.230472	0.016092949
Riverside (SC)	2040	OBUS	Aggregated	60	GAS	7449.235228	0.007841651
Riverside (SC)	2040	OBUS	Aggregated	60	DSL	6193.616861	0.013976425
Riverside (SC)	2040	OBUS	Aggregated	65	GAS	3635.883199	0.00877441
Riverside (SC)	2040	OBUS	Aggregated	65	DSL	4522.457773	0.014982048
Riverside (SC)	2040	OBUS	Aggregated	70	GAS	1019.558637	0.009478247
Riverside (SC)	2040	OBUS	Aggregated	70	DSL	1421.659192	0.015235026
Riverside (SC)	2040	OBUS	Aggregated	75	DSL	0	0
Riverside (SC)	2040	SBUS	Aggregated	5	GAS	100.5299221	0.057726798
Riverside (SC)	2040	SBUS	Aggregated	5	DSL	317.010627	0.228958797
Riverside (SC)	2040	SBUS	Aggregated	10	GAS	352.3522243	0.036390507
Riverside (SC)	2040	SBUS	Aggregated	10	DSL	1111.105999	0.185422717
Riverside (SC)	2040	SBUS	Aggregated	15	GAS	704.7044486	0.02415515
Riverside (SC)	2040	SBUS	Aggregated	15	DSL	2222.211999	0.130564396
Riverside (SC)	2040	SBUS	Aggregated	20	GAS	956.5216745	0.016918176
Riverside (SC)	2040	SBUS	Aggregated	20	DSL	3016.291363	0.09443756
Riverside (SC)	2040	SBUS	Aggregated	25	GAS	1509.933743	0.012494077

Riverside (SC)	2040	SBUS	Aggregated	25	DSL	4761.418617	0.069209576
Riverside (SC)	2040	SBUS	Aggregated	30	GAS	1811.523509	0.009734224
Riverside (SC)	2040	SBUS	Aggregated	30	DSL	5712.450498	0.051005706
Riverside (SC)	2040	SBUS	Aggregated	35	GAS	1859.300985	0.007988494
Riverside (SC)	2040	SBUS	Aggregated	35	DSL	5863.111787	0.037590355
Riverside (SC)	2040	SBUS	Aggregated	40	GAS	1255.126459	0.006920254
Riverside (SC)	2040	SBUS	Aggregated	40	DSL	3957.910415	0.027703902
Riverside (SC)	2040	SBUS	Aggregated	45	GAS	602.1794624	0.006328215
Riverside (SC)	2040	SBUS	Aggregated	45	DSL	1898.910145	0.020418096
Riverside (SC)	2040	SBUS	Aggregated	50	GAS	301.5897663	0.006122266
Riverside (SC)	2040	SBUS	Aggregated	50	DSL	951.031881	0.015048885
Riverside (SC)	2040	SBUS	Aggregated	55	GAS	448.8970944	0.006169629
Riverside (SC)	2040	SBUS	Aggregated	55	DSL	1415.55018	0.01109217
Riverside (SC)	2040	SBUS	Aggregated	60	GAS	249.8323143	0.006644226
Riverside (SC)	2040	SBUS	Aggregated	60	DSL	787.820153	0.009523253
Riverside (SC)	2040	SBUS	Aggregated	65	DSL	0	0
Riverside (SC)	2040	SBUS	Aggregated	70	DSL	0	0
Riverside (SC)	2040	SBUS	Aggregated	75	DSL	0	0
Riverside (SC)	2040	UBUS	Aggregated	5	GAS	335.9594349	0.153757765
Riverside (SC)	2040	UBUS	Aggregated	5	DSL	324.3350766	0.268717927
Riverside (SC)	2040	UBUS	Aggregated	10	GAS	1043.311116	0.096727563
Riverside (SC)	2040	UBUS	Aggregated	10	DSL	1007.212049	0.2019923
Riverside (SC)	2040	UBUS	Aggregated	15	GAS	1824.629554	0.064204465
Riverside (SC)	2040	UBUS	Aggregated	15	DSL	1761.496493	0.100749688
Riverside (SC)	2040	UBUS	Aggregated	20	GAS	17241.36915	0.044960205
Riverside (SC)	2040	UBUS	Aggregated	20	DSL	16644.80947	0.042451928
Riverside (SC)	2040	UBUS	Aggregated	25	GAS	89.35763054	0.033305732
Riverside (SC)	2040	UBUS	Aggregated	25	DSL	86.26581349	0.028147934
Riverside (SC)	2040	UBUS	Aggregated	30	GAS	200.9886865	0.025956578
Riverside (SC)	2040	UBUS	Aggregated	30	DSL	194.0343812	0.021904269
Riverside (SC)	2040	UBUS	Aggregated	35	GAS	230.5729108	0.021359922
Riverside (SC)	2040	UBUS	Aggregated	35	DSL	222.5949771	0.017478833
Riverside (SC)	2040	UBUS	Aggregated	40	GAS	232.3674466	0.018497175
Riverside (SC)	2040	UBUS	Aggregated	40	DSL	224.3274211	0.014456447
Riverside (SC)	2040	UBUS	Aggregated	45	GAS	340.952631	0.016931825
Riverside (SC)	2040	UBUS	Aggregated	45	DSL	329.1555058	0.012636202
Riverside (SC)	2040	UBUS	Aggregated	50	GAS	526.1339885	0.016344773
Riverside (SC)	2040	UBUS	Aggregated	50	DSL	507.9294992	0.011910146
Riverside (SC)	2040	UBUS	Aggregated	55	GAS	536.9630797	0.016680306
Riverside (SC)	2040	UBUS	Aggregated	55	DSL	518.3838986	0.012215568
Riverside (SC)	2040	UBUS	Aggregated	60	GAS	723.0811518	0.017886285
Riverside (SC)	2040	UBUS	Aggregated	60	DSL	698.0621957	0.013683139
Riverside (SC)	2040	UBUS	Aggregated	65	GAS	517.626446	0.019970813
Riverside (SC)	2040	UBUS	Aggregated	65	DSL	499.7163218	0.016239886
Riverside (SC)	2040	UBUS	Aggregated	70	GAS	159.2461409	0.021595748

| Riverside (SC) | 2040 | UBUS | Aggregated | 70 | DSL | 153.7361478 | 0.019644174 |

TOG_RUNEX	CO_RUNEX	NOx_RUNEX	CO2_RUNEX	PM10_RUNEX	PM2_5_RUNEX
3.075434276	54.49243948	5.448430662	3788.860885	0.007776968	0.007150635
3.676696398	13.58803704	15.51097541	3353.90405	0.009611457	0.009195669
1.930011768	49.49990465	4.756584256	3213.942403	0.00489325	0.004499163
7.491290474	26.3281001	5.73913144	3912.21578	0.006539597	0.006256697
1.276876557	45.05727454	4.227435514	2318.444139	0.003248022	0.002986437
2.16036498	8.013974348	7.059412525	2514.401227	0.007330667	0.007013546
0.89783739	41.42207061	3.762467162	1873.152873	0.00227445	0.002091272
0.337798034	1.562069417	4.102555873	1851.28724	0.00615678	0.00589044
0.662859481	38.00718505	3.434412172	1762.207816	0.001680228	0.001544908
0.363646434	1.584014229	2.625836683	1730.298694	0.006629441	0.006342654
0.51665003	34.99306346	3.181010046	1677.809502	0.001309463	0.001204003
0.204463861	0.948995166	1.648446983	1606.30238	0.006176979	0.005909766
0.425063386	32.32301321	2.99053381	1609.153115	0.001076599	0.000989893
0.201547268	0.872999681	1.097421104	1564.961154	0.005661006	0.005416114
0.368280127	29.88594918	2.866395656	1550.931445	0.000933791	0.000858586
0.127948764	0.572563934	0.789206514	1484.168252	0.005326952	0.00509651
0.336911269	27.73065896	2.786023392	1516.821521	0.000854436	0.000785623
0.080624823	0.375068172	0.589649184	1419.222138	0.00503215	0.004814461
0.325307336	25.81242958	2.75038329	1497.984691	0.000824793	0.000758367
0.045494878	0.229011579	0.452681092	1354.221611	0.004780727	0.004573915
0.331902408	24.13001466	2.751122698	1469.779099	0.000839934	0.000772288
0.030739842	0.159334783	0.356811431	1308.944987	0.004527541	0.004331682
0.35635579	22.56375021	2.809859606	1449.209913	0.000902359	0.000829686
0.026395351	0.136801077	0.320486166	1288.053219	0.004405647	0.004215061
0.398744069	20.9067971	2.986086604	1445.257522	0.001022701	0.000940336
0.026395351	0.136801077	0.322173991	1288.053219	0.004405647	0.004215061
0.430729217	20.16247121	3.089947417	1441.305131	0.001110828	0.001021365
0.026395351	0.136801077	0.322464014	1288.053219	0.004405647	0.004215061
0	0	0	0	0	0
0.038509502	0.576501567	0.038643154	636.7222282	0.005290257	0.004864196
0.091041592	2.584832803	0.043379121	475.3306223	0.001833891	0.001754557
0.024242022	0.524975984	0.03348716	472.4221833	0.003328646	0.003060567
0.068143136	1.934935862	0.036152574	395.9952755	0.001698601	0.001625121
0.015883643	0.471101619	0.029939191	360.6796116	0.002209494	0.002031548
0.033304851	0.945048185	0.024448039	325.7049872	0.001471121	0.001407481
0.01121735	0.436318487	0.026672909	289.7205397	0.001547224	0.001422616

0.012984322	0.367709151	0.016302108	267.1838448	0.00125069	0.001196586
0.008265941	0.399262988	0.024394078	239.8573851	0.001143004	0.00105095
0.007808472	0.220853327	0.012559013	223.9646285	0.001069836	0.001023555
0.00644241	0.367581632	0.022600832	206.4556263	0.000890789	0.000819048
0.005902895	0.166881666	0.010588667	193.9944644	0.000946332	0.000905395
0.005301023	0.339692473	0.021266074	184.5284644	0.000732381	0.000673397
0.004697437	0.132746128	0.009279113	175.3670882	0.000854877	0.000817896
0.004583284	0.313057957	0.020403336	170.7413861	0.000635233	0.000584073
0.003876029	0.109481402	0.008354197	164.104353	0.00078416	0.000750238
0.004187893	0.289949905	0.01983661	164.1822204	0.000581249	0.000534437
0.003285662	0.092750007	0.007664957	158.5121983	0.0007278	0.000696316
0.004045014	0.270116903	0.019592089	164.0599409	0.000561082	0.000515894
0.002844173	0.0802237	0.007135583	158.9157038	0.000681942	0.000652442
0.004149181	0.254613404	0.019557814	170.8587299	0.000571379	0.000525362
0.002503979	0.070554007	0.006714185	166.2927703	0.000644171	0.000616304
0.004460211	0.238463801	0.019951321	183.8931854	0.000613841	0.000564404
0.002364466	0.066569571	0.006554826	180.2813322	0.000628988	0.000601778
0.00488627	0.21349904	0.021265414	200.9464405	0.0006957	0.00063967
0.002370828	0.066713243	0.006609468	202.6727039	0.000632409	0.000605051
0.005259264	0.204430487	0.021940242	214.1030342	0.000755645	0.000694788
0.002375263	0.066813806	0.00663201	218.8544716	0.000634794	0.000607333
0.046460066	0.645467496	0.04537959	689.6152903	0.005627775	0.005174531
0.299641634	2.644837764	0.157605409	504.0499075	0.010422726	0.009971843
0.02930808	0.587265425	0.039246426	511.6617593	0.003541758	0.003256515
0.224175408	1.979185029	0.132576	424.2923397	0.009460341	0.009051091
0.01924571	0.526895155	0.035043476	390.7397225	0.002351424	0.002162048
0.109888774	0.969877816	0.091874296	351.8082767	0.008112843	0.007761885
0.013613985	0.487590188	0.031182673	313.814441	0.001646909	0.001514272
0.043207552	0.381066292	0.063634663	289.0373581	0.006859758	0.006563007
0.010047476	0.446052987	0.028499337	259.8183922	0.00121683	0.00111883
0.02613111	0.230547919	0.050834766	242.3474056	0.005849062	0.005596034
0.0078397	0.410552037	0.026393797	223.6368677	0.000948432	0.000872048
0.019801179	0.174921888	0.044249146	209.5619217	0.005160927	0.004937667
0.006455071	0.379336174	0.024832307	199.8818514	0.000779827	0.000717022
0.015796272	0.139800939	0.039983074	189.1376884	0.004655711	0.004454307
0.005582547	0.34962123	0.023830862	184.9597489	0.000676399	0.000621924
0.013072864	0.116001577	0.037071718	176.5260872	0.004269983	0.004085265
0.005099621	0.32385143	0.023180991	177.8588604	0.0006189	0.000569055
0.011125077	0.099090592	0.034986591	170.2010956	0.003968001	0.003796347
0.004921843	0.301744919	0.022914099	177.724009	0.00059738	0.000549269
0.009681799	0.086716735	0.033464435	170.4838381	0.003728567	0.003567271
0.00504194	0.284433555	0.022899051	185.0624695	0.00060827	0.000559282
0.008587485	0.077568401	0.032317604	178.2547411	0.003539077	0.003385978
0.005411449	0.266498355	0.023398111	199.1786934	0.000653371	0.000600751
0.008169696	0.07464027	0.032095165	193.0863748	0.003476415	0.003326027

0.005921237	0.239037703	0.025006813	217.7992678	0.000740366	0.000680739
0.008254902	0.076564662	0.032651404	216.8794519	0.003522237	0.003369867
0.006368006	0.229042941	0.025837981	232.1020433	0.00080408	0.000739322
0.008314309	0.077911633	0.032906181	233.9921944	0.003554186	0.003400433
0.048571195	0.735530763	0.046028414	788.7138209	0.005226862	0.004805907
0.29747967	2.594255144	0.150490884	578.6961016	0.008990522	0.008601596
0.030587414	0.669687016	0.039864697	585.1885014	0.003288867	0.003023992
0.222689933	1.942035263	0.125003753	487.1270072	0.008446494	0.008081102
0.020052412	0.601138236	0.035632938	446.8826506	0.002183158	0.002007333
0.108739605	0.948293909	0.083778591	403.9085718	0.007364954	0.007046349
0.014164255	0.556560842	0.031732381	358.9080973	0.001528826	0.001405699
0.04228063	0.368717349	0.055057711	331.8417282	0.00628448	0.006012616
0.010440746	0.509302752	0.029016667	297.1521066	0.00112944	0.001038478
0.025381228	0.22134366	0.041800384	278.2373268	0.005387276	0.005154224
0.008139102	0.468869245	0.026880652	255.7716061	0.000880234	0.000809342
0.019172676	0.167202922	0.034770065	240.5965468	0.004773318	0.004566826
0.006697874	0.43327413	0.02529219	228.6034076	0.00072371	0.000665425
0.015245367	0.132956249	0.030059783	217.1476303	0.004315994	0.004129286
0.005791507	0.39933997	0.024268574	211.5362658	0.000627714	0.00057716
0.012567559	0.109606342	0.026698425	202.6683409	0.003959335	0.003788056
0.005291716	0.369882261	0.023598129	203.4147519	0.000574367	0.00052811
0.010639986	0.092799569	0.024164875	195.4066632	0.003671735	0.003512897
0.005110415	0.344584539	0.023312405	203.2606902	0.000554432	0.00050978
0.009194399	0.080197059	0.022192008	195.7312778	0.003433863	0.003285316
0.005240306	0.32474972	0.023277096	211.6554437	0.000564596	0.000519125
0.008074988	0.070440727	0.020599498	204.6529961	0.003233176	0.00309331
0.005631488	0.304167859	0.023756159	227.8002562	0.000606539	0.00055769
0.007606365	0.06636261	0.019925455	221.6810889	0.00314418	0.003008164
0.006170598	0.272646569	0.025347945	249.0861413	0.000687404	0.000632043
0.007607327	0.066384336	0.019993424	248.9977509	0.003144697	0.003008659
0.006641376	0.26115901	0.026165004	265.4405363	0.000746623	0.000686493
0.007607997	0.066399544	0.020012861	268.6447685	0.003145058	0.003009004
0.040032266	0.247747108	0.098739982	1296.556851	0.007501277	0.006897147
0.862670653	3.462838457	0.493478542	1137.202001	0.021117797	0.02020425
0.025131739	0.225129438	0.086145746	1275.271664	0.004719786	0.004339669
0.643273916	2.585048601	0.462021928	955.995719	0.01773628	0.016969017
0.016598892	0.204590019	0.076856838	885.9148273	0.003132881	0.002880568
0.322117602	1.296910679	0.405827182	624.3452037	0.014601799	0.013970131
0.011687367	0.188330416	0.0681922	769.1692062	0.002193821	0.002017138
0.134317217	0.54405982	0.368234266	532.1600059	0.01206077	0.011539027
0.008624791	0.172730157	0.062303669	705.0717724	0.001620664	0.001490141
0.084285758	0.344616386	0.358874943	471.9752433	0.010140011	0.009701359
0.006720933	0.158998427	0.057730397	639.8970707	0.001263043	0.001161322
0.064840712	0.268027613	0.360225783	428.6045453	0.008847738	0.008464989
0.005529705	0.146871268	0.05426631	639.8970707	0.001038434	0.000954802

0.052525031	0.22023763	0.365572981	428.6045453	0.007931837	0.007588709
0.00478884	0.135738259	0.052066596	637.4921464	0.000900688	0.00082815
0.044265742	0.189128459	0.373952553	416.8709654	0.007270058	0.006955558
0.004386199	0.126096235	0.050487941	634.5645951	0.000824147	0.000757773
0.038558689	0.168942238	0.383120533	406.624825	0.006793874	0.006499974
0.00423387	0.117339597	0.049866962	669.1953849	0.000795554	0.000731483
0.034608691	0.156891144	0.393587976	426.2917782	0.006465554	0.006185857
0.00431718	0.1096288	0.049929601	705.0717724	0.000810158	0.000744911
0.031990314	0.151896189	0.404695217	445.4597802	0.006267934	0.005996786
0.004625187	0.102296584	0.051223545	715.4649762	0.00087037	0.000800274
0.031656023	0.158817977	0.418605247	449.8438101	0.006315821	0.006042601
0.005150948	0.094351806	0.054963529	725.2166801	0.000986447	0.000907001
0.033250219	0.177978135	0.434968962	455.7002349	0.006603846	0.006318166
0.005563691	0.090986362	0.056886198	718.3750133	0.001071449	0.000985158
0.034361724	0.191389216	0.442354206	450.5218232	0.006804662	0.006510295
0.03146057	0.215594701	0.058179926	1369.280649	0.007734902	0.007111957
0.844654086	3.272746066	0.265619579	1187.127999	0.016019524	0.015326527
0.019750539	0.195912333	0.050759105	1421.254778	0.004866782	0.004474826
0.632044824	2.449190579	0.225931796	1055.037742	0.014832211	0.014190576
0.013044742	0.178038502	0.045285861	999.7943982	0.003230454	0.002970283
0.309436609	1.199577143	0.161650381	702.3068998	0.01284355	0.012287944
0.009184872	0.163889056	0.040180452	874.9898203	0.002262147	0.002079961
0.121232779	0.470603682	0.116381341	599.0161188	0.010918014	0.010445706
0.006778054	0.150313386	0.036710791	791.2141992	0.00167114	0.001536551
0.07314569	0.284399837	0.096468115	533.8170855	0.009338695	0.008934707
0.005281849	0.138363747	0.034016111	715.1359108	0.00130238	0.001197491
0.055371797	0.215645226	0.086543886	481.4178624	0.008260256	0.007902921
0.004345686	0.127810441	0.03197499	715.1359108	0.001070776	0.000984539
0.044127107	0.172223522	0.080329579	481.4178624	0.007461787	0.007138993
0.003763455	0.118122264	0.030678866	698.8005232	0.00092874	0.000853942
0.036473941	0.142772926	0.076403855	463.8341941	0.006844516	0.006548425
0.003447027	0.109731574	0.029748686	682.3315112	0.000849815	0.000781373
0.030989011	0.121806788	0.07367776	445.8585884	0.006352718	0.006077902
0.003327315	0.102111364	0.02938279	711.353826	0.000820332	0.000754265
0.026908914	0.106409655	0.071912072	462.2803107	0.005952745	0.005695232
0.003392787	0.095401268	0.029419698	743.7413473	0.000835391	0.000768111
0.023793917	0.094945367	0.070766415	478.4823876	0.00562352	0.005380249
0.003634844	0.089020621	0.03018212	751.524395	0.000897478	0.000825198
0.022566835	0.091100183	0.071286755	480.1499698	0.005491564	0.005254002
0.004048029	0.08210691	0.032385807	758.9197421	0.001017169	0.00093525
0.022730326	0.093138144	0.073112692	481.4178624	0.005522201	0.005283313
0.004372395	0.07917823	0.03351869	743.7413473	0.001104819	0.00101584
0.022844315	0.094564607	0.073890027	475.5824943	0.005543562	0.00530375
15.63691253	41.75929965	1.614018476	567.6765676	0.013828536	0.012891663
10.10373564	32.26711101	1.444777976	421.0630267	0.008893297	0.008290848

6.918854866	26.39219078	1.334389638	324.1517246	0.006032622	0.005624004
4.961421432	22.10630929	1.230178459	259.0029205	0.004314833	0.004022598
3.762682043	19.28506425	1.163576161	214.7912286	0.003253074	0.003032771
3.002533187	17.2891391	1.113928766	184.8784998	0.002584374	0.002409372
2.522234123	15.9288993	1.080498955	165.1620241	0.002162802	0.002016358
2.233767421	15.12195585	1.065213148	153.1406554	0.001906135	0.00177708
2.079530399	14.75014379	1.060046862	147.3757667	0.0017687	0.001648957
2.036085999	14.86604059	1.065689109	147.2031907	0.00172751	0.001610562
2.091327744	15.49738304	1.0765586	152.6036496	0.001775705	0.001655499
2.26530156	16.95995501	1.10491401	164.1979345	0.00192061	0.001790598
2.617325042	20.05513255	1.179040784	183.3692482	0.002185647	0.002037697
2.857178236	22.16598917	1.213846108	196.5011458	0.002376382	0.002215521
0.07518285	0.964117697	0.071537708	1058.503696	0.005838453	0.005368242
0.106151722	2.933887655	0.049946196	719.0254035	0.00227494	0.002176527
0.047504818	0.876616571	0.061544847	785.3579726	0.003674941	0.003378973
0.079459516	2.196263268	0.041543685	610.6275911	0.002125721	0.002033763
0.031245666	0.786187316	0.054740849	599.7825972	0.002440223	0.002243695
0.038814364	1.072518493	0.027945357	517.8532029	0.001848786	0.001768808
0.0221322	0.727206846	0.048567341	481.6875621	0.00170934	0.001571675
0.015108113	0.417116581	0.018475582	430.0750346	0.001575368	0.001507218
0.01635332	0.665080404	0.044303151	398.8107105	0.001263104	0.001161378
0.00907596	0.25044243	0.014112388	363.6726957	0.001349368	0.001290994
0.012770996	0.612027683	0.040986043	343.2735178	0.000984585	0.00090529
0.006857957	0.189203098	0.011805454	314.0999544	0.001194837	0.001143148
0.010520908	0.565426801	0.038550893	306.8096317	0.000809596	0.000744394
0.0054549	0.150467832	0.010264777	285.0022732	0.001079986	0.001033267
0.009100413	0.521133095	0.037016661	283.9084199	0.000702232	0.000645676
0.004498481	0.124061166	0.009169827	266.5804243	0.000990705	0.000947848
0.008311403	0.482750985	0.036056207	273.0100533	0.000642522	0.000590775
0.003810443	0.105059633	0.008348237	256.545163	0.000919027	0.00087927
0.008016931	0.449854646	0.035720759	272.8023607	0.000620144	0.0005702
0.003295035	0.090818989	0.007711909	257.8307038	0.000860103	0.000822895
0.008204677	0.424113649	0.035811095	284.058955	0.000631391	0.000580541
0.002896704	0.079805158	0.007201038	272.1014627	0.000810826	0.00077575
0.008795373	0.397493319	0.036751884	305.7259198	0.000678125	0.000623511
0.002731305	0.075223599	0.006993723	294.6311302	0.000789718	0.000755556
0.009612136	0.356785787	0.039513184	334.3510996	0.000768306	0.000706429
0.002734479	0.075295288	0.007032728	330.8294628	0.000791425	0.000757189
0.010329961	0.341981385	0.040970628	356.3202891	0.00083436	0.000767164
0.002736692	0.075345466	0.007047127	356.1434328	0.000792616	0.000758327
0.103091988	0.383332074	0.205153523	3680.310019	0.007524488	0.006918489
0.903233893	2.142511316	11.01434256	2002.312495	0.069172329	0.066179964
0.064696148	0.348211629	0.179102952	3141.745875	0.00473439	0.004353097
0.676744305	1.621127069	9.172702996	1818.108352	0.061950195	0.059270257
0.042802327	0.316959539	0.159178549	2165.611166	0.003142575	0.002889482

0.332410937	0.82448004	6.196028517	1492.824559	0.049423738	0.047285689
0.030096511	0.291387363	0.141670775	1522.606017	0.002200609	0.002023379
0.132938644	0.355994965	4.156268323	1225.040091	0.039454363	0.037747585
0.022219789	0.267365036	0.129318294	1329.558339	0.001625679	0.001494752
0.083130739	0.232368777	3.243761833	1098.811172	0.033854595	0.03239006
0.017318685	0.246161921	0.119776768	1221.809907	0.001266951	0.001164915
0.0640981	0.184267031	2.756304298	1031.40044	0.030603209	0.029279328
0.014248599	0.227379207	0.112604635	1128.02681	0.001041647	0.000957756
0.051558344	0.152486963	2.424565577	975.4578897	0.028625688	0.027387353
0.012345161	0.210235456	0.107930375	1049.462589	0.000903475	0.000830712
0.042848194	0.130425092	2.187474094	930.9835214	0.027739294	0.026539304
0.011293642	0.195073869	0.104904063	975.1089536	0.000826697	0.000760117
0.036678898	0.114886022	2.009710342	897.9773352	0.027840827	0.026636445
0.010904665	0.181579908	0.103562082	912.1689067	0.000798016	0.000733746
0.03235801	0.10415286	1.874975689	876.439331	0.02886715	0.02761837
0.011125739	0.169744806	0.103589923	887.026968	0.000812665	0.000747216
0.029483271	0.097228228	1.771242925	866.3695088	0.030777246	0.029445836
0.011945444	0.158726775	0.105801585	892.5379109	0.000873064	0.00080275
0.028892638	0.096189799	1.734420903	867.7678688	0.033814662	0.032351854
0.013366346	0.147070786	0.112437181	909.0835021	0.000989499	0.000909808
0.030118076	0.099877103	1.754530805	880.6344107	0.037906732	0.036266903
0.014438524	0.141834757	0.116347924	937.6076594	0.001074765	0.000988206
0.031948254	0.105286698	1.776407441	904.9691347	0.04276146	0.040911619
0.092908285	0.355644474	0.162571914	3654.883173	0.007756283	0.007131616
0.271528403	1.254520335	10.07599006	2109.844038	0.005855842	0.005602521
0.058305289	0.323060735	0.141928392	3120.039908	0.004880235	0.004487196
0.219897829	1.01603204	7.64789464	1870.77519	0.005265621	0.005037832
0.038574198	0.294065945	0.126139493	2150.649203	0.003239383	0.002978493
0.154838577	0.715559854	4.583595933	1569.558052	0.00452004	0.004324505
0.027123497	0.270340816	0.112265627	1512.086504	0.0022684	0.00208571
0.111992739	0.517644747	2.552727691	1370.783732	0.004028591	0.003854316
0.020024859	0.248053592	0.102477024	1320.37257	0.001675759	0.001540798
0.082073279	0.379359757	1.373188715	1264.825448	0.003663646	0.003505159
0.015607899	0.228381951	0.094915935	1213.36856	0.00130598	0.001200801
0.060484374	0.279570095	0.845695553	1197.152234	0.003372952	0.00322704
0.012841084	0.21095589	0.089232448	1120.233401	0.001073736	0.00098726
0.044574646	0.206031817	0.565790055	1143.355122	0.003131319	0.00299586
0.011125673	0.19505041	0.085528376	1042.211971	0.000931307	0.000856303
0.032850319	0.151839347	0.401930201	1098.161461	0.00292481	0.002798284
0.010178025	0.180983926	0.083130204	968.3720359	0.000852164	0.000783533
0.024210584	0.111903772	0.298329081	1061.188343	0.002744749	0.002626013
0.009827473	0.168464617	0.082066764	905.8668347	0.000822599	0.00075635
0.017844222	0.082474937	0.229274867	1028.419082	0.00258537	0.002473528
0.010026709	0.15748435	0.082088827	880.8985988	0.0008377	0.000770234
0.013153416	0.060789248	0.181090461	999.452501	0.002442645	0.002336977

0.010765441	0.147262137	0.083841436	886.3714672	0.000899959	0.000827479
0.011293761	0.05219084	0.162502989	985.294069	0.002376574	0.002273765
0.012045983	0.136448046	0.089099751	902.8027468	0.001019981	0.000937835
0.011293761	0.05219084	0.16318009	985.294069	0.002376574	0.002273765
0.013012248	0.131590209	0.092198781	931.1298339	0.001107873	0.001018648
0.011293761	0.05219084	0.163390294	985.294069	0.002376574	0.002273765
0	0	0	0	0	0
0.098751629	0.376767652	0.168527503	3658.998261	0.007758107	0.007133293
0.374760237	1.832866919	12.87295241	2387.916246	0.007233072	0.006920173
0.061972323	0.342248632	0.147127736	3123.552808	0.004881382	0.004488251
0.308720309	1.514093136	9.887858217	2133.831854	0.006575756	0.006291292
0.041000272	0.311531723	0.130760433	2153.070651	0.003240145	0.002979194
0.224273727	1.105382542	6.058022562	1816.150259	0.005761862	0.005512606
0.028829394	0.286397461	0.116378318	1513.788985	0.002268933	0.0020862
0.156601776	0.767493011	3.283210519	1560.829488	0.005027392	0.004809909
0.021284296	0.262786508	0.106231123	1321.859198	0.001676153	0.001541161
0.115520108	0.566758791	1.769642912	1444.885777	0.004592259	0.0043936
0.016589537	0.241946488	0.098393044	1214.73471	0.001306287	0.001201083
0.08513254	0.417674879	1.086761209	1368.107484	0.004228398	0.00404548
0.013648707	0.223485422	0.092501351	1121.494688	0.001073988	0.000987492
0.06242788	0.306036808	0.722402683	1304.342101	0.003913336	0.003744047
0.011825407	0.206635251	0.088661586	1043.385413	0.000931526	0.000856504
0.046443215	0.228025857	0.514725071	1259.996317	0.003676349	0.003517312
0.010818159	0.191733301	0.08617556	969.4623406	0.000852364	0.000783717
0.034115616	0.16741338	0.379813827	1215.999526	0.003441771	0.003292882
0.010445559	0.178470419	0.085073163	906.8867638	0.000822793	0.000756528
0.025117411	0.123238549	0.290531731	1179.236992	0.003237994	0.00309792
0.010657325	0.166837988	0.085096034	881.8904158	0.000837897	0.000770415
0.018320598	0.089739877	0.227005816	1142.160196	0.003036887	0.002905513
0.011442519	0.156008637	0.086912848	887.3694462	0.00090017	0.000827673
0.015911096	0.07808485	0.20470677	1133.816427	0.002974557	0.002845879
0.012803599	0.144552252	0.092363793	903.819226	0.001020221	0.000938055
0.017055922	0.084610625	0.214556046	1171.337053	0.003108564	0.002974088
0.013830636	0.139405889	0.095576351	932.178207	0.001108134	0.001018888
0.017343917	0.086252266	0.21702754	1180.775839	0.003142275	0.003006341
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0.084234808	0.325520989	0.156057191	1744.26135	0.007159172	0.006582595
0.260652161	1.190958648	9.284556486	2118.959122	0.005651247	0.005406776
0.053100942	0.297000757	0.135099892	1489.012032	0.004504534	0.004141753
0.211089649	0.964543567	7.043296015	1878.895653	0.005083772	0.004863851
0.035247138	0.271211441	0.11928591	1026.378711	0.002990002	0.002749197
0.148637626	0.679280483	4.225557118	1576.444777	0.004368718	0.004179729
0.024686963	0.248379893	0.106978792	721.6301922	0.002093769	0.001925143
0.107509973	0.49139104	2.369431304	1377.221646	0.003897618	0.003729008
0.018231327	0.227967912	0.097590611	630.1363772	0.001546752	0.001422181

0.078789834	0.360121961	1.286706405	1270.996725	0.003545816	0.003392425
0.014204157	0.209805335	0.090455676	579.0696398	0.001205441	0.001108358
0.058066114	0.265397376	0.802092823	1203.337937	0.00326503	0.003123786
0.011656792	0.193322089	0.085451917	534.6216913	0.000991075	0.000911257
0.042793758	0.195592587	0.544707862	1149.770189	0.003031404	0.002900267
0.010098018	0.178719066	0.081930578	497.3866395	0.000859611	0.000790381
0.031538783	0.144152179	0.393244545	1105.784752	0.002831417	0.002708931
0.009234116	0.16576524	0.07972542	462.1471699	0.000786561	0.000723214
0.023244448	0.106245282	0.297323808	1068.695693	0.002656652	0.002541726
0.008933596	0.154593721	0.078395506	432.3171038	0.000759272	0.000698123
0.01713201	0.078311892	0.232951781	1036.782954	0.002501512	0.002393298
0.009002708	0.142788307	0.080272361	420.4012293	0.00077321	0.000710938
0.012627591	0.057728543	0.188591862	1008.883543	0.002362087	0.002259905
0.009695239	0.133911833	0.081477971	423.0131084	0.000830676	0.000763776
0.010841499	0.049567343	0.170932234	996.1727983	0.002297349	0.002197967
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0	0	0	0	0	0
0.224362969	1.146317166	0.670402629	3673.02682	0.007571028	0.006961281
9.459413296	40.55022178	2.09210525	2887.897395	0.006152203	0.005886061
0.141144634	1.04378263	0.582725109	3135.528476	0.004763672	0.004380021
7.086302852	30.44965786	1.72294209	2622.223248	0.005194292	0.00496959
0.093687005	0.953134158	0.514529178	2161.325501	0.003162012	0.002907353
3.473088849	15.04168058	1.152202774	2153.072593	0.003614223	0.003457873
0.065605826	0.872738016	0.461613126	1519.592835	0.00221422	0.002035894
1.370550692	6.024570724	0.805154324	1766.852126	0.002481821	0.002374458
0.048599646	0.803418406	0.418443533	1326.927191	0.001635734	0.001503997
0.839254591	3.696316462	0.679018049	1584.794546	0.001960559	0.001875746
0.037875778	0.739627364	0.387652467	1219.39199	0.001274788	0.00117212
0.638071195	2.820348327	0.615425488	1487.569324	0.001644989	0.001573828
0.031168348	0.683337538	0.364286055	1125.794487	0.00104809	0.00096368
0.507876412	2.256838069	0.57297056	1406.884443	0.001416262	0.001354996
0.026991034	0.631505515	0.349487924	1047.385741	0.000909063	0.00083585
0.419029225	1.868463317	0.543906812	1342.739903	0.001264653	0.001209945
0.02470688	0.586305979	0.33931101	973.1792487	0.00083181	0.000764819
0.357186442	1.5887743	0.523413491	1295.135706	0.00118467	0.001133422
0.023850255	0.545624318	0.335149412	910.3637579	0.000802952	0.000738285
0.314641423	1.382067404	0.509682117	1264.071851	0.001172952	0.001122211
0.024339864	0.510186151	0.335085116	885.2715741	0.000817692	0.000751837
0.286917202	1.227601588	0.500927512	1249.548337	0.001227316	0.001174223
0.026099625	0.476474566	0.343054044	890.7716111	0.000878464	0.000807715
0.283340114	1.168583674	0.502118481	1251.565165	0.001360725	0.001301861
0.029141364	0.440555458	0.36567922	907.2844591	0.000995619	0.000915435
0.298701084	1.180880984	0.512503788	1270.122335	0.00156931	0.001501423
0.031512464	0.425310514	0.377556975	935.7521682	0.001081412	0.000994318

0.31916671	1.203381061	0.52311525	1305.219846	0.001840986	0.001761346

Aggregate E
Speed
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75

Calculated		
CO RUNEX*VMT	VMT	CO_RUNEX
1343.850302	24.66122484	54.49243948
108383.3189	7976.377939	13.58803704
368.1390841	7.437167539	49.49990465
177903.3953	6757.167993	26.3281001
866.3031403	19.22670976	45.05727454
67190.95768	8384.224202	8.013974348
2251.317922	54.35068524	41.42207061
143750.5019	92025.68099	1.562069417
8393.3539	220.8359785	38.00718505
97280.60791	61413.97353	1.584014229
17558.35707	501.7667883	34.99306346
131559.3412	138630.1488	0.948995166
18986.49818	587.3987693	32.32301321
143159.761	163986.0405	0.872999681
16959.31864	567.4679608	29.88594918
95005.05205	165929.1591	0.572563934
22803.41706	822.3178932	27.73065896
79891.75918	213005.9685	0.375068172
34250.93308	1326.916281	25.81242958
79682.75082	347942.018	0.229011579
35090.69358	1454.234242	24.13001466
62090.2226	389684.0446	0.159334783
42877.44379	1900.280024	22.56375021
82585.11455	603687.606	0.136801077
19391.14002	927.5040995	20.9067971
76754.00106	561062.8428	0.136801077
5243.99034	260.086687	20.16247121
25429.06029	185883.4805	0.136801077
0	0	0
36517.23193	63342.8147	0.576501567
2267.395608	877.192368	2.584832803
14125.30706	26906.57762	0.524975984
720.9788451	372.611237	1.934935862
42291.32745	89771.13597	0.471101619
1174.865524	1243.180552	0.945048185
123826.4237	283798.2513	0.436318487

1445.145714	3930.132585	0.367709151
682221.0015	1708700.837	0.399262988
5225.976645	23662.65757	0.220853327
1302836.987	3544347.356	0.367581632
8191.103058	49083.30116	0.166881666
1296847.794	3817711.308	0.339692473
7018.146564	52868.9361	0.132746128
976387.5106	3118871.411	0.313057957
4728.629704	43191.16874	0.109481402
893997.5265	3083282.705	0.289949905
3960.269876	42698.3245	0.092750007
990570.3885	3667191.416	0.270116903
4074.1194	50784.48657	0.0802237
790569.8611	3104981.313	0.254613404
3033.738625	42998.81404	0.070554007
916946.4036	3845222.621	0.238463801
3544.824471	53249.9219	0.066569571
583401.1596	2732570.416	0.21349904
2524.532136	37841.54407	0.066713243
122010.1003	596829.2796	0.204430487
552.2221457	8265.09039	0.066813806
2723.559067	4219.513896	0.645467496
6.140460814	2.321677684	2.644837764
1052.586893	1792.352909	0.587265425
1.951863432	0.986195532	1.979185029
3150.837382	5980.008268	0.526895155
3.191231543	3.290343885	0.969877816
9217.85211	18904.91716	0.487590188
3.963828154	10.40193856	0.381066292
50771.21398	113823.2799	0.446052987
14.43882352	62.62829685	0.230547919
96932.53103	236102.9107	0.410552037
22.72401165	129.9094807	0.174921888
96470.0287	254312.7581	0.379336174
19.56220218	139.9289752	0.139800939
72637.4065	207760.2853	0.34962123
13.26068421	114.3146888	0.116001577
66515.70982	205389.5817	0.32385143
11.19825463	113.0102709	0.099090592
73712.07039	244286.0364	0.301744919
11.65577255	134.4120326	0.086716735
58830.81748	206835.0113	0.284433555
8.827716911	113.8055809	0.077568401
68262.32623	256145.3948	0.266498355
10.51960087	140.9373358	0.07464027

43511.37752	182027.2575	0.239037703
7.668391947	100.1557601	0.076564662
9106.093303	39757.14453	0.229042941
1.704342987	21.87533387	0.077911633
17740.02151	24118.66696	0.735530763
137.3267585	52.93494697	2.594255144
6860.982054	10245.05759	0.669687016
43.66773813	22.48555367	1.942035263
20547.87979	34181.62172	0.601138236
71.14179294	75.02082665	0.948293909
60142.06085	108060.1729	0.556560842
87.44770409	237.1673165	0.368717349
331358.4104	650611.8591	0.509302752
316.0663376	1427.943937	0.22134366
632767.2111	1349560.071	0.468869245
495.2508889	2961.975091	0.167202922
629827.7417	1453647.237	0.43327413
424.186617	3190.422569	0.132956249
474237.8283	1187554.124	0.39933997
285.6789754	2606.409164	0.109606342
434242.9667	1174003.224	0.369882261
239.1136832	2576.668044	0.092799569
481155.3398	1396334.673	0.344584539
245.7746852	3064.634624	0.080197059
383940.3163	1182265.274	0.32474972
182.7796941	2594.80135	0.070440727
445339.0229	1464122.556	0.304167859
213.2505066	3213.413494	0.06636261
283679.1009	1040464.591	0.272646569
151.5940323	2283.581346	0.066384336
59348.68178	227251.1365	0.26115901
33.11771317	498.7641679	0.066399544
119.2421199	481.3057991	0.247747108
2241.283131	647.2387202	3.462838457
31.40371013	139.4917981	0.225129438
435.327649	168.4021139	2.585048601
89.10949956	435.5515493	0.204590019
1024.680282	790.0931796	1.296910679
208.848703	1108.948343	0.188330416
824.6037364	1515.649026	0.54405982
771.9661191	4469.202895	0.172730157
2228.544841	6466.740791	0.344616386
1589.946985	9999.765523	0.158998427
3950.603568	14739.53943	0.268027613
1684.693297	11470.54368	0.146871268

3664.368367	16638.2483	0.22023763
1561.85465	11506.37013	0.135738259
3426.898525	18119.42284	0.189128459
2175.671957	17254.05958	0.126096235
4009.773059	23734.58002	0.168942238
3084.001044	26282.69685	0.117339597
5648.558821	36003.04439	0.156891144
2889.707662	26359.01937	0.1096288
5706.136863	37566.03038	0.151896189
3515.304182	34363.84715	0.102296584
10044.25675	63243.82749	0.158817977
2130.740473	22582.93251	0.094351806
13774.12063	77392.20687	0.177978135
613.5685908	6743.522659	0.090986362
4957.98526	25905.24874	0.191389216
38.88475723	180.3604496	0.215594701
1053.090609	321.7758382	3.272746066
10.24072404	52.27197235	0.195912333
205.0496625	83.72139933	2.449190579
29.05853451	163.2148904	0.178038502
471.1893161	392.7961773	1.199577143
68.10539026	415.5578886	0.163889056
354.6034084	753.507509	0.470603682
251.7375165	1674.751156	0.150313386
914.3316128	3214.951259	0.284399837
518.4804039	3747.22725	0.138363747
1580.202342	7327.787271	0.215645226
549.3770986	4298.374172	0.127810441
1424.587097	8271.733635	0.172223522
509.3195166	4311.799473	0.118122264
1286.113097	9008.102096	0.142772926
709.4848358	6465.639828	0.109731574
1437.281987	11799.6871	0.121806788
1005.690204	9848.95472	0.102111364
1904.623769	17898.97518	0.106409655
942.3312917	9877.555172	0.095401268
1773.201234	18676.01634	0.094945367
1146.337802	12877.21639	0.089020621
2864.351663	31441.77715	0.091100183
694.8327156	8462.536435	0.08210691
3583.552314	38475.66819	0.093138144
200.0842128	2527.010439	0.07917823
1217.882322	12878.83878	0.094564607
18996.8034	454.9119253	41.75929965
6235.17301	193.2361719	32.26711101

17015.39858	644.7133821	26.39219078
45056.3411	2038.166594	22.10630929
236655.7639	12271.45323	19.28506425
440088.0844	25454.59793	17.2891391
436735.822	27417.82805	15.9288993
338715.756	22398.9383	15.12195585
326617.5861	22143.3493	14.75014379
391524.4225	26336.83261	14.86604059
345578.9829	22299.18316	15.49738304
468356.0649	27615.40727	16.95995501
393574.4189	19624.62317	20.05513255
95009.53698	4286.27553	22.16598917
11686.59156	12121.54034	0.964117697
987.1414227	336.4619027	2.933887655
4513.657388	5148.952848	0.876616571
313.8928318	142.9213139	2.196263268
13505.88996	17178.97209	0.786187316
511.4227568	476.842833	1.072518493
39493.72769	54308.79521	0.727206846
628.7901177	1507.468527	0.417116581
217470.6427	326983.9875	0.665080404
2273.068275	9076.210736	0.25044243
415114.3981	678260.8204	0.612027683
3562.074992	18826.72661	0.189203098
413085.4783	730572.8653	0.565426801
3051.30265	20278.77063	0.150467832
311033.0773	596840.0015	0.521133095
2055.284123	16566.70001	0.124061166
284837.3711	590029.6011	0.482750985
1720.631087	16377.66131	0.105059633
315693.9382	701768.7627	0.449854646
1769.085335	19479.24492	0.090818989
252000.6686	594181.9355	0.424113649
1316.22001	16492.91913	0.079805158
292490.507	735837.5427	0.397493319
1536.434806	20424.90415	0.075223599
186568.9472	522915.8618	0.356785787
1092.89314	14514.7614	0.075295288
39058.27335	114211.6943	0.341981385
238.8612962	3170.214585	0.075345466
24.57219248	64.10158232	0.383332074
35.32631151	16.48827301	2.142511316
6.73139294	19.33132723	0.348211629
7.643450501	4.714899064	1.621127069
15.84028183	49.97572209	0.316959539

10.74041704	13.02689758	0.82448004
41.16516344	141.2729882	0.291387363
12.42972536	34.91545273	0.355994965
153.4717872	574.0159196	0.267365036
33.77475293	145.3497897	0.232368777
321.053118	1304.235507	0.246161921
61.98725567	336.3990586	0.184267031
347.166561	1526.817537	0.227379207
60.72313559	398.2185394	0.152486963
310.0997494	1475.011661	0.210235456
50.5744922	387.7665834	0.130425092
416.9586095	2137.439583	0.195073869
59.01576826	513.6897203	0.114886022
626.2755004	3449.035229	0.181579908
89.45763008	858.9070878	0.10415286
641.6304522	3779.971051	0.169744806
99.61578445	1024.556207	0.097228228
784.0105409	4939.371714	0.158726775
142.9463758	1486.086644	0.096189799
354.5654039	2410.848641	0.147070786
94.03859774	941.5431024	0.099877103
95.88593301	676.0397463	0.141834757
29.9673112	284.6258053	0.105286698
65.48955269	184.1433156	0.355644474
2654.602566	2116.029921	1.254520335
17.94043869	55.53271171	0.323060735
614.7894944	605.0886886	1.01603204
42.21735493	143.5642433	0.294065945
1196.282087	1671.812751	0.715559854
109.7129669	405.8320481	0.270340816
2319.509329	4480.890305	0.517644747
409.0314165	1648.963891	0.248053592
7076.398813	18653.53054	0.379359757
855.6674421	3746.650892	0.228381951
12069.57897	43171.92424	0.279570095
925.2647197	4386.057775	0.21095589
10529.37039	51105.55507	0.206031817
826.4746378	4237.236085	0.19505041
7556.1634	49764.19861	0.151839347
1111.273764	6140.179343	0.180983926
7377.211521	65924.60092	0.111903772
1669.142972	9907.973557	0.168464617
9091.066008	110228.2268	0.082474937
1710.06683	10858.64618	0.15748435
7992.988552	131486.8809	0.060789248

2089.536767	14189.23295	0.147262137
9953.711554	190717.5967	0.05219084
944.9840391	6925.596	0.136448046
6306.39438	120833.3569	0.05219084
255.5541947	1942.045669	0.131590209
1906.405107	36527.58054	0.05219084
0	0	0
36.42355549	96.67378623	0.376767652
121.3221678	66.19256779	1.832866919
9.977997058	29.15423503	0.342248632
29.53728145	19.50823285	1.514093136
23.48017518	75.37009382	0.311531723
63.19980861	57.17460355	1.105382542
61.01944774	213.0586198	0.286397461
110.0013235	143.3255052	0.767493011
227.4924455	865.6930188	0.262786508
342.2026394	603.7888515	0.566758791
475.899579	1966.962126	0.241946488
583.6969465	1397.491151	0.417674879
514.6077424	2302.645689	0.223485422
501.7614061	1639.545942	0.306036808
459.6633141	2224.515477	0.206635251
370.414997	1624.442957	0.228025857
618.0610485	3223.545657	0.191733301
358.1400233	2139.255679	0.16741338
928.3331334	5201.60786	0.178470419
440.0627098	3570.820269	0.123238549
951.0939001	5700.703478	0.166837988
375.2231074	4181.230472	0.089739877
1162.145033	7449.235228	0.156008637
483.6276448	6193.616861	0.07808485
525.5751058	3635.883199	0.144552252
382.6479796	4522.457773	0.084610625
142.1324778	1019.558637	0.139405889
122.6213269	1421.659192	0.086252266
0	0	0
32.72459961	100.5299221	0.325520989
377.5465476	317.010627	1.190958648
104.6488773	352.3522243	0.297000757
1071.710143	1111.105999	0.964543567
191.1239087	704.7044486	0.271211441
1509.50524	2222.211999	0.679280483
237.5807513	956.5216745	0.248379893
1482.178552	3016.291363	0.49139104
344.2164426	1509.933743	0.227967912

1714.69141	4761.418617	0.360121961
380.0672975	1811.523509	0.209805335
1516.06937	5712.450498	0.265397376
359.4439499	1859.300985	0.193322089
1146.781201	5863.111787	0.195592587
224.3150279	1255.126459	0.178719066
570.5414099	3957.910415	0.144152179
99.82042317	602.1794624	0.16576524
201.7502436	1898.910145	0.106245282
46.62388409	301.5897663	0.154593721
74.47710621	951.031881	0.078311892
64.09725599	448.8970944	0.142788307
81.71765014	1415.55018	0.057728543
33.45550318	249.8323143	0.133911833
39.0501515	787.820153	0.049567343
0	0	0
0	0	0
0	0	0
385.1160671	335.9594349	1.146317166
13151.85929	324.3350766	40.55022178
1088.990021	1043.311116	1.04378263
30669.26229	1007.212049	30.44965786
1739.116754	1824.629554	0.953134158
26495.86759	1761.496493	15.04168058
15047.19831	17241.36915	0.872738016
100277.8319	16644.80947	6.024570724
71.79156512	89.35763054	0.803418406
318.8657465	86.26581349	3.696316462
148.6567325	200.9886865	0.739627364
547.2445424	194.0343812	2.820348327
157.5591252	230.5729108	0.683337538
502.3608183	222.5949771	2.256838069
146.7413241	232.3674466	0.631505515
419.1475573	224.3274211	1.868463317
199.902566	340.952631	0.586305979
522.9538084	329.1555058	1.5887743
287.0714985	526.1339885	0.545624318
701.9928045	507.9294992	1.382067404
273.9511267	536.9630797	0.510186151
636.3688969	518.3838986	1.227601588
344.5297783	723.0811518	0.476474566
815.7440851	698.0621957	1.168583674
228.043156	517.626446	0.440555458
590.1055017	499.7163218	1.180880984
67.72905802	159.2461409	0.425310514

185.0031686	153.7361478	1.203381061

Aggregate Emission Factors by Speed.

CO RUNEX*VMT	VMT	CO_RUNEX
221126.8644	118779.5432	1.861657811
246442.9852	56280.98538	4.378796562
199230.6265	168263.8595	1.184036947
547058.3613	611947.4545	0.893962966
1646839.061	2953019.631	0.557679686
3073727.217	6139516.564	0.500646457
3067994.387	6634926.815	0.462400637
2309777.125	5470728.577	0.422206493
2134134.849	5492946.287	0.388522796
2398287.856	6684186.361	0.358800268
1956781.259	5816331.74	0.336428757
2355580.92	7380921.189	0.31914457
1620266.433	5401533.512	0.299964155
365826.4608	1270674.155	0.287899506
0	0	N/A

Attachment G

**Additional Documentation
Attachment to Comment 1-F7**

ESA

Attachment A

CHAPTER 2: IS MY COMPANY SUBJECT TO THE CAP-AND-TRADE REGULATION?

For sectors covered as of January 1, 2013, your facility is a covered entity and is required to participate in the Cap-and-Trade Program if it is in a sector listed in Table 2.1 and has covered emissions that meet or exceed the applicability threshold in any data year from 2009 through 2012. If your facility exceeds the applicability threshold for the first time in any year following 2012, your facility becomes a covered entity during that year.

If your facility is in a sector covered as of January 1, 2015, and the covered emissions exceed the applicability threshold in any data year from 2011 through 2014, then your facility is a covered entity and required to participate in the Cap-and-Trade Program starting January 1, 2015. If your facility exceeds the applicability threshold for the first time in any year following 2014, your facility becomes a covered entity during that year.

Once a covered entity, your facility will continue to be a covered entity for the entire compliance period, even if emissions drop below the threshold or your facility ceases reporting and shuts down all processes, units, and supply operations subject to reporting. If your facility's emissions have dropped below 25,000 metric tons CO_2e for an entire compliance period, then your facility is no longer a covered entity, effective at the beginning of the next compliance period.

The entity with operational control over the covered sources will be responsible for the compliance obligation surrender under the Cap-and-Trade Regulation.

Nothing in this document supplements the provisions of the Cap-and-Trade Regulation.

Key Definitions

"Covered Entity" means an entity within California that has one or more of the processes or operations and has a compliance obligation as specified in subarticle 7 of the Cap-and-Trade Regulation; and that has emitted, produced, imported, manufactured, or delivered in 2008 or any subsequent year more than the applicable threshold level specified in section 95812 (a) of the Regulation.

"Compliance Period" means the three-year period for which the compliance obligation is calculated for covered entities, except for the first compliance period. The compliance obligation for the first compliance period only considers emissions from data years of 2013 and 2014.

Cap-and-Trade Regulation Instructional Guidance

September 2012

Sector	Emission Source	Applicability Threshold	When Covered
Petroleum Refining	Stationary Combustion Emissions	≥ 25,000 metric tons of CO_2e	January 1, 2013
	Process Emissions		
	Catalyst Regeneration		
	Flares and Destruction Devices		
Pulp and Paper Manufacturing	Stationary Combustion Emissions	≥ 25,000 metric tons of CO_2e	January 1, 2013
	Process Emissions		
Stationary Combustion	Stationary Combustion Emissions	≥ 25,000 metric tons of CO_2e	January 1, 2013
Suppliers of Liquefied Petroleum Gas	Combustion Emissions from Total Volume of Liquefied Petroleum Gas Supplied	≥ 25,000 metric tons of CO_2e	January 1, 2015
Suppliers of Natural Gas	Combustion Emissions from the Total Volume of Natural Gas Delivered to Non-Covered Entities	≥ 25,000 metric tons of CO_2e	January 1, 2015
Suppliers of RBOB and Distillate Fuel Oil	Combustion Emissions from Total Volume of RBOB and Distillate Fuel Oil Supplied	≥ 25,000 metric tons of CO_2e	January 1, 2015

2.1 How Do I Know if My CO_2e Emissions Exceed the Applicability Threshold?

The inclusion threshold is based on the subset of emissions reported and verified under the MRR that generate a compliance obligation. See section 95852 of the Cap-and-Trade Regulation for more details on emissions categories used to calculate a compliance obligation. For most facilities, the total emissions for any year during the period 2008–2010 (excluding biomass CO_2 emissions) will give a rough estimate for comparison with the threshold.

There may be situations in which a facility's emissions for comparison with the threshold will be slightly different due to the presence of excluded or newly included process, vented, or fugitive emissions (see the examples).

Example 2.1.1

Refineries reported fugitive emissions under the 2008–2010 MRR, but these emissions do not apply toward the threshold for compliance under the Cap-and-Trade Regulation and should be subtracted when comparing 2008–2010 emissions with the threshold.

Example 2.1.2

Glass Manufacturers would have only reported combustion emissions from 2008-2010, and I will now need to include their process emissions using the methods in the revised MRR for comparison to the threshold.

Additionally, biomass-derived fuels that were reported in 2008–2010 have to meet stricter standards beginning 2011, and may count toward the compliance obligation in some situations.

Electricity importers that imported any amount of electricity from an unspecified source between years 2008–2010 are automatically a covered entity. Electricity importers that imported electricity from specified sources between years 2008–2010 are covered entities if any of the sources emitted more than 25,000 $MTCO_2e$. In almost all cases specified imports will be from large generators that exceed 25,000 $MTCO_2e$ emissions. So a safe assumption would be that any entity with specified imports will be a covered entity.

If your facility meets the applicability requirements found in section 95101 of the MRR for both source category and emissions threshold, then it must report. Any facility that fits into one or more of the categories in subsection 95101 for calendar year 2011 or later must submit an emissions data report for that year and for subsequent calendar years, except as provided in the report cessation provisions of subsection 95101(h) in the MRR. The emissions data report must cover all source categories and GHGs for

which calculation methods are provided or referenced in the MRR for the facility type. More information about the MRR can be found at http://www.arb.ca.gov/cc/reporting/ghg-rep/ghg-rep.htm or by contacting sector-specific staff listed at http://www.arb.ca.gov/cc/reporting/ghg-rep/ghg-contacts.htm.

Key Definition
"Emissions Data Report" means the report that provides the information required by the MRR, prepared by an operator or supplier each year and submitted by electronic means to ARB.

2.2 Preliminary Draft List of Covered Entities

A preliminary list of entities determined to be covered by the Cap-and-Trade Regulation is listed at http://www.arb.ca.gov/cc/capandtrade/covered_entities_list.pdf.

This list includes covered entities with certified non-biomass emissions from 2008 and 2010 and verified emissions from 2009 that meet or exceed the specified thresholds, and is subject to change based on further review and verified emissions reports from 2010 and 2011. The list does not include entities covered starting in 2015, such as fuel suppliers. The preliminary list of covered entities was developed using current MRR data that were not collected explicitly to support the Cap-and-Trade Program. Amendments to the MRR, which are effective January 1, 2012, may modify the list of covered entities (because, for example, some biomass and process emissions have an obligation under the Cap-and-Trade Regulation but were not previously required to be reported).

This list neither substitutes for nor supplements the provisions of the Cap-and-Trade Regulation and is intended to provide information about program coverage based on the best available information as of the creation date indicated in the header of the file. An entity not listed here should not assume that it is not covered by the Cap-and-Trade Regulation.

2.3 Other Requirements Affecting Applicability

2.3.1. Eligibility Requirements for Biomass-Derived Fuels

Emissions from combustion of biomass-derived fuel which meets the requirements of 95852.1.1 will not be subject to a compliance obligation when reported as biomass CO_2 in an emissions data report that has received a positive or qualified positive emissions data verification statement and determined as exempt pursuant to section 95852.2 of the Regulation and 95103(g) of the MRR.

Contracts for purchasing any biomass-derived fuel must be executed prior to January 1, 2012, and remain in effect or have been renegotiated with the same California operator within one year of contract expiration. The delivery of the fuel under the contract must commence by 90 days after the execution date of the signed contract, by January 1, 2012, or 10 days after the date on which the California Energy Commission provides

notice that the operator's electricity generating facility is certified as eligible for California's Renewables Portfolio Standard for the contracted biomass-derived fuel, or cannot be so certified, provided that the application for certification was submitted to the CEC before January 1, 2012.

The fuel being provided under a contract must meet the provisions listed in section 95852.1.1(2) through (4).

As part of a biomass-derived fuel's eligibility to avoid a compliance obligation, no party may sell, trade, give away, claim, or otherwise dispose of any of the carbon credits, carbon benefits, carbon emissions reductions, carbon offsets, or allowances, howsoever entitled, attributed to the fuel production that would prevent the resulting combustion from not having a compliance obligation. This section was necessary to specify that Generation of Renewable Energy Credits is allowable and will not prevent a biomass-derived fuel that meets this section's requirements from being exempt from a compliance obligation. However, to prevent double-counting of the environmental attributes of utilizing biomass-derived fuel, the section prevents another source from claiming the benefits realized or using the benefits to fulfill a compliance obligation, or for any other purposes.

Attachment B

CHAPTER 1: HOW DOES THE CAP-AND-TRADE PROGRAM WORK?

1.1 What is the Cap-and-Trade Program?

The Cap-and-Trade Program will reduce greenhouse gas (GHG) emissions from major sources (covered entities) by setting a firm cap on statewide GHG emissions while employing market mechanisms to cost-effectively achieve the emission-reduction goals. The statewide cap for GHG emissions from major sources, which is measured in metric tons of carbon dioxide equivalent (MTCO$_2$e), will commence in 2013 and decline over time, achieving GHG emission reductions throughout the program's duration. Each covered entity will be required to surrender one permit to emit (the majority of which will be allowances, entities are also allowed to use a limited number of ARB offset credits) for each ton of GHG emissions they emit. Some covered entities will be allocated some allowances and will be able to buy additional allowances at auction, purchase allowances from others, or purchase offset credits.

1.2 What is the Mandatory Reporting of Greenhouse Gas Emissions Regulation?

The Cap-and-Trade Program is relies on data collected through the Mandatory Reporting of Greenhouse Gas Emissions Regulation (MRR) to identify major sources of greenhouse gas emissions in California. The MRR was originally adopted in 2007 and was updated in 2011 to meet the needs of the Cap-and-Trade Program. The MRR requires facilities, fuel, and carbon dioxide (CO$_2$) suppliers—as well as electric power entities—to report their annual GHG emissions in 2009 and every year thereafter. A detailed description of the reporting Regulation can be found in the Mandatory Reporting Guidance Document available at http://www.arb.ca.gov/cc/reporting/ghg-rep/ghg-rep.htm..

1.3 What are the Basic Components of the Cap-and-Trade Program?

1.3.1. What Is an Allowance?

An *allowance* is a tradable permit to emit one metric ton of a carbon dioxide equivalent greenhouse gas emission. The total number of allowances provided by ARB each year will be equivalent to the annual allowance budget specified in the Regulation. Each allowance will have a unique serial number.

1.3.2. What Is an Offset Credit?

An *offset credit* is equivalent to a GHG reduction or GHG removal enhancement of one metric ton of CO$_2$e. The GHG reduction or GHG removal enhancement must be real, additional, quantifiable, permanent, verifiable, and enforceable and may only be issued to offset projects using approved Compliance Offset Protocols. ARB offset credits, along with allowances, are frequently referred to as "compliance instruments" since they are used by entities to comply with the program. However, a covered entity may only meet up to 8 percent of its compliance obligation using ARB offset credits. More information on the requirements for offset credits, approved Compliance Offset Protocols, and offset projects can be found in Chapter 6.

1.3.3 What Is a Compliance Period?

A *compliance period* is the time frame during which the compliance obligation is calculated. The years 2013 and 2014 are known as the "first compliance period," and the years 2015–2017 are known as the "second compliance period." The third compliance period is from 2018–2020. At the end of each compliance period each facility will be required to turn in compliance instruments, including allowances and a limited number of ARB offset credits, equivalent to their total GHG emissions throughout the compliance period.

1.4 Who Will Have to Comply with the Cap-and-Trade Program?

Starting in 2012, major GHG-emitting sources, such as electricity generation (including imports), and large stationary sources (e.g., refineries, cement production facilities, oil and gas production facilities, glass manufacturing facilities, and food processing plants) that emit more than 25,000 $MTCO_2e$ per year will have to comply with the Cap-and-Trade Program. The program expands in 2015 to include fuel distributors (natural gas and propane fuel providers and transportation fuel providers) to address emissions from transportation fuels, and from combustion of other fossil fuels not directly covered at large sources in the program's initial phase. Additional information, including a preliminary list of the covered entities, can be found in Chapter 2 and at http://www.arb.ca.gov/cc/capandtrade/covered_entities_list.pdf.

1.5 How Do I Determine if My Company Needs to Comply with Cap-and-Trade Program?

Most facilities within the specified sectors mentioned above that emit GHGs will have to comply with the Cap-and-Trade Program and/or the Mandatory Reporting Regulation. Some facilities will be required to report their annual emissions but not have to surrender compliance instruments. This is determined by the type of energy or industrial sector and the facility's annual GHG emissions. For example, most industries that emit 10,000 or greater metric tons of CO_2e are required to report their GHGs whereas, the subset of industrial facilities with annual emissions equal to or greater than 25,000 metric tons of CO_2e are required to comply with the Cap-and-Trade Program. To determine if your facility is subject to both or either regulation, please refer to the detailed description in Chapter 2.

1.5.1 What Does My Company Have to Do in Order to Comply with the Cap-and-Trade Regulation?

To comply with the Cap-and-Trade Regulation, each facility must register with ARB, report its annual GHG emissions, create the necessary accounts, designate an account authorized representative, and surrender compliance instruments by the established deadlines. Facilities are also required to retain their records for 10 years. A more detailed explanation of each of these requirements is located in Chapter 3.

1.6 What Is a Compliance Obligation, and How Does My Company Determine How Many Allowances and ARB Offset Credits We Need to Surrender?

A company's *compliance obligation* is equivalent to the quantity of allowances or a limited number of ARB offset credits a facility is required to surrender to ARB by a specified deadline in order to comply with the Cap-and-Trade Program. Each facility's compliance obligation will be determined by the quantity of reported and verified GHGs emissions. ARB will directly allocate a proportion of allowances to qualified facilities subject to the program. Each facility will be responsible for acquiring the remaining allowances or limited number of offset credits to comply with the program. Chapter 3 describes how to estimate the quantity of allowances your facility will be freely allocated. A discussion of how to acquire allowances and offset credits can be found in Chapter 5.

1.7 What Are the Deadlines for Each Action Required by My Company?

Table 1.1 summarizes the major compliance requirements for covered entities. Please refer to the subsequent chapters in this document and the Regulation for additional details.

Table1.1. Main Compliance Deadlines for Covered Entities			
Event	**Description**	**Regulation Location**	**Occurrence**
Reporting and Verification			
MRR reporting deadline for most entities	Deadline to submit GHG reports to ARB using the online mandatory reporting tool. Applies to all stationary sources that are not electric power entities.	95103 (e)	April 10 of each year
MRR reporting deadline for electric power entities	Deadline to submit GHG reports to ARB using the online mandatory reporting tool. Applies to all electric power entities.	95103 (e)	June 1 of each year
MRR verification deadline	Deadline of verification statement to be received by ARB from verification body.	95103 (f)	September 1 of each year

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Deadline for Offset Verification Statements	Deadline of offset verification statements to be received by ARB.	95977 (d)	Within nine months after the conclusion of the Reporting Period for which offset verification services were performed.
Opt-in Covered Entities Reporting Deadline	Deadline for opt-in covered entities to submit GHG reports to ARB using the online mandatory reporting tool.		• In 2012, the recommended deadline was June 1, 2012. • For years 2013 and subsequent, the recommended deadline is April 10.
Program Registration			
Program registration deadline for covered entities	Deadline to register for the Cap-and-Trade Program for covered entities	95830 (d)(1)(B)	January 31, 2012
Registration deadlines for new entrants	Deadline to register for the Cap-and-Trade Program for facilities that became covered entities	95830 (d)(1)(A)	Within 30 calendar days of the reporting deadline contained in the MRR if the entity is not a covered entity as of January 1, 2013.
Request to Opt Into Program	Opt-in covered entities must submit a request to opt into program by requesting a user ID through the Compliance Instrument Tracking System Service (CITSS).	95830 (d)(2)	• In 2012, opt-in covered entities should make their request by November 30, 2012. • For 2013 and subsequent years, opt-in covered entities should make their request by March 1.
Allocation			
Allocation to utilities for the next calendar year	Distribution of free allowances into utilities' holding account for the following calendar year emissions. For example, on July 15, 2012, allowances will	95870 (d)	September 14, 2012; November 1 of 2013 to 2019.

	be distributed for the 2013 calendar year.		
Allocation to industry for the next calendar year	Distribution of free allowances into industrial facilities' holding account for the following calendar year emissions. For example, on November 1, 2012, allowances will be distributed for the 2013 calendar year.	95870 (e)	November 1 of 2012 to 2019
POU (Publically Owned Utility) Compliance/Holding Accounts	POUs must inform ARB of the share of their allowances that should be placed in compliance versus holding accounts	95892 (b)(2)	September 1 of 2012 to 2019
Auction			
Auction Registration	Registration deadline for Auctions	95912 (c)(2)	Registration deadline for an auction occurs 30 days prior to the auction.
Auction	Auction of compliance allowances	95910 (a)	In 2012, single auction on November 14. Starting 2013, four auctions will occur each year on the twelfth business day, or first business day thereafter, of the second month of each quarter. For example, 2013 auctions will be held February 19, May 16, August 16, and November 19.

Deadline for allowances to be consigned to auction	Electric utilities can consign allowances to be sold in the auctions. These allowances must be consigned ahead of time.	95910 (d)(4)	The deadline to consign allowances to the auction occurs 10 days prior to the auction in 2012, and 75 days prior to the auction in 2013 and thereafter.
Sale of Reserve Allowances			
Sale of Allowances from the Allowance Price Containment Reserve	In addition to the auction, allowances are sold from the allowance price containment reserve at three reserve price tiers, starting at $40, $45, and $50 per allowance in 2013. Only covered entities and opt-in covered entities may participate in this sale.	95913 (c)(3)	Sale of allowances through the allowance price containment reserve occurs 6 weeks after the standard allowance auction. Bids must be submitted 2 weeks prior to sale of allowances.
Surrender			
Compliance Instrument Surrender Deadline; (A) — Annual Surrender, (T) — Triennial Surrender	Allowances must be surrendered annually to ARB in the amount according to a facility's compliance obligation, determined by the facility's emissions. The annual compliance obligation is 30 percent of the reported emissions of the previous year. The triennial compliance obligation is the sum of the reported emissions during a compliance obligation minus the instruments surrendered as part of the annual compliance obligation.	95856 (d)	Annual surrender of compliance instruments occurs on Nov. 1 of the calendar year following a year of reported emissions. For example the surrender of instruments for 2013 will occur Nov. 1, 2014. Triennial surrender occurs the calendar year following the end of a compliance period. Compliance periods are 2013–2014, 2015–2017, and 2018–2020. Thus, triennial surrender will occur Nov, 1 of 2015, 2018, and 2021.

1.8 What Happens if My Company Cannot Meet a Deadline?

Facilities that do not adhere to the Cap-and-Trade Program requirements will be subject to stringent penalties. The Health and Safety Code allows ARB to determine the appropriate enforcement mechanism based on the specific circumstances for a rule violation.

1.9 How Do I Create an Offset Project?

There are stringent requirements for developing offset projects that may generate ARB offset credits used for compliance. Currently, there are four Compliance Offset Protocols that are approved and may be used to develop offset projects under the Cap-and-Trade Program. They are urban forestry, forestry, livestock digesters, and destruction of ozone-depleting substances.

We strongly recommend that each party interested in developing an offset project review the qualification criteria outlined in Chapter 6 of this document and speak with ARB or an approved Offset Project Registry.

Attachment C

⊕EPA

**Proposed EPA Policy on Permit Requirements for
Peak Wet Weather Discharges from
Wastewater Treatment Plants Serving
Sanitary Sewer Collection Systems**

December 2005

EPA seeks comments on a proposed policy regarding implementing requirements for wet weather blending at municipal publicly owned wastewater treatment plants serving sanitary sewer collection systems. The proposed policy seeks to ensure that all feasible solutions are used by local governments when peak wet weather flows to the wastewater treatment plant exceed the treatment capacity of secondary treatment units. The proposed policy applies only to publicly owned wastewater treatment plants that serve sanitary sewers and, during wet weather, divert a portion of the flow around secondary treatment units and recombine the flow with flow from the secondary treatment units. It is EPA's goal to ensure that all feasible solutions are used by local governments when addressing problems related to heavy wet weather flows and to improve treatment of wastewater to protect human health and the environment.

Background

Many municipal sewage treatment systems experience problems during heavy downpours when flows to the wastewater treatment plant exceed the treatment capacity of existing secondary treatment units. Many municipalities manage peak wet weather flows by routing some peak flow around traditional biological secondary treatment units, blending the rerouted flow with the flow receiving secondary treatment; and disinfecting and discharging. In an attempt to address this issue, EPA proposed a policy addressing National Pollutant Discharge Elimination System (NPDES) permit requirements for municipal wastewater treatment plants (serving sanitary sewers) during wet weather conditions in November 2003. The 2003 proposed policy is intended to provide clarity about managing peak wastewater flows that are sometimes diverted from secondary treatment unit processes during significant wet weather events. EPA received more than 98,000 public comments. EPA stopped working on the proposal in May 2005 in order to review different approaches and new information.

In October 2005, the Natural Resources Defense Council (NRDC) and the National Association of Clean Water Agencies (NACWA) developed joint recommendations to address peak wet weather flow diversions at wastewater treatment plants that are serving sanitary sewer collection systems. Their approach describes limited circumstances when NPDES permits can approve anticipated wet weather blending as a "bypass" at publicly owned treatment work (POTW) treatment plants serving sanitary sewers. Their recommended policy would apply only to blended discharge from sewage treatment plants serving sanitary sewer collection systems. It would not apply to overflows in collection systems; dry weather diversions; diversions around primary or tertiary treatment units; or diverted flows that are not recombined with flow from the secondary treatment units prior to discharge.

EPA's proposed policy is informed by and reflects those joint recommendations.

Additional Background

A bypass is an "intentional diversion of waste streams from any portion of a treatment facility." Bypasses are prohibited unless they are 1) unavoidable to prevent severe property damage or personal injury; 2) there were no feasible alternatives; and 3) the NPDES authority was notified.

EPA's 1994 CSO Policy provides guidance on approval of anticipated bypasses in a permit for POTW plants serving combined sewers. That policy describes approvals of "CSO-related bypass" in permits under the bypass regulation that recognizes "approved anticipated bypass". Under the CSO Policy, permittees need to demonstrate that there are 'no feasible alternatives' for approved bypass at the POTW plant in order for such CSO-related bypasses to be approved in a permit. The CSO Policy's provision are intended to encourage delivery of maximum flows to the POTW treatment plant, but also to ensure that bypasses would not cause water quality exceedences. The approach in today's proposal for approval of anticipated bypasses at POTWs serving separate sanitary sewers is based on application of the same bypass regulation, but analysis differs in scope and focus due to the different types of sewers considered.

About this Guidance

EPA seeks comments on its proposed policy on peak wet weather flow diversions for publicly owned wastewater treatment plants serving sanitary sewers. This policy seeks to ensure that all feasible solutions are used by local governments when addressing problems related to heavy wet weather flows.

During peak wet weather flows, limited diversions around biological treatment units at municipal sewage treatment systems can maximize flows to treatment plants which can help prevent raw sewage from being discharged into our nation's waters, backing up into homes and other buildings, or damaging biological treatment units. Although increased flows may cause short-term management challenges, the ultimate goal of this policy is to ensure, to the extent feasible, all wet weather flows receive secondary treatment and other treatment necessary to meet the requirements of the Clean Water Act.

The proposed policy provides that in limited situations, an NPDES permitting agency can approve anticipated diversions around biological treatment units as a "bypass" in a permit, provided:

- the permittee demonstrates (and the NPDES authority agrees) there are no feasible alternatives to the diversion;
- the diversion from the secondary treatment units receives a minimum of primary treatment and any feasible supplemental treatment; and
- effluent limitations based on secondary treatment and water quality-based effluent limits will be met.

Key provisions:

- This policy applies only to publicly owned wastewater treatment plants serving sanitary sewer systems.
- All flows diverted from the secondary treatment units in peak wet weather events will receive a minimum of primary treatment and any supplemental treatment or technology shown feasible using the factors outlined in the proposed policy.

- Discharges must meet effluent limitations, including the 85 percent removal requirement and other secondary treatment requirements and any other more stringent limitations necessary to meet water quality standards. Existing requirements that discharges meet limits would not change.
- Diversions will not be approved when peak flows are largely due to poor collection system maintenance or the lack of investment in or upgrades to treatment capacity.
- Permits that approve diversion should include an implementation schedule in the permit for implementing feasible technologies.
- The availability of feasible alternatives would be determined on a POTW-by-POTW basis.
- Diversions are reported to the permitting authority and the public will be notified.
- This policy encourages public participation in the permitting process.

How to Get Additional Information

For additional information, including a copy of the proposed guidance, visit the NPDES website at http://www.epa.gov/npdes/wetweather/ or contact Kevin Weiss at 202-564-0742 or weiss.kevin@epa.gov.

Attachment A

CHAPTER 2: IS MY COMPANY SUBJECT TO THE CAP-AND-TRADE REGULATION?

For sectors covered as of January 1, 2013, your facility is a covered entity and is required to participate in the Cap-and-Trade Program if it is in a sector listed in Table 2.1 and has covered emissions that meet or exceed the applicability threshold in any data year from 2009 through 2012. If your facility exceeds the applicability threshold for the first time in any year following 2012, your facility becomes a covered entity during that year.

If your facility is in a sector covered as of January 1, 2015, and the covered emissions exceed the applicability threshold in any data year from 2011 through 2014, then your facility is a covered entity and required to participate in the Cap-and-Trade Program starting January 1, 2015. If your facility exceeds the applicability threshold for the first time in any year following 2014, your facility becomes a covered entity during that year.

Once a covered entity, your facility will continue to be a covered entity for the entire compliance period, even if emissions drop below the threshold or your facility ceases reporting and shuts down all processes, units, and supply operations subject to reporting. If your facility's emissions have dropped below 25,000 metric tons CO_2e for an entire compliance period, then your facility is no longer a covered entity, effective at the beginning of the next compliance period.

The entity with operational control over the covered sources will be responsible for the compliance obligation surrender under the Cap-and-Trade Regulation.

Nothing in this document supplements the provisions of the Cap-and-Trade Regulation.

Key Definitions

"Covered Entity" means an entity within California that has one or more of the processes or operations and has a compliance obligation as specified in subarticle 7 of the Cap-and-Trade Regulation; and that has emitted, produced, imported, manufactured, or delivered in 2008 or any subsequent year more than the applicable threshold level specified in section 95812 (a) of the Regulation.

"Compliance Period" means the three-year period for which the compliance obligation is calculated for covered entities, except for the first compliance period. The compliance obligation for the first compliance period only considers emissions from data years of 2013 and 2014.

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Table 2.1 Covered Entities

Sector	Emission Source	Applicability Threshold	When Covered
Carbon Dioxide Suppliers	Supplied CO_2	≥ 25,000 metric tons of CO_2e	January 1, 2013
Cement Production	Stationary Combustion Emissions	≥ 25,000 metric tons of CO_2e	January 1, 2013
	Process Emissions		
Cogeneration	Stationary Combustion Emissions	≥ 25,000 metric tons of CO_2e	January 1, 2013
Electricity- In-state Generators	Stationary Combustion Emissions from Electricity Generating Facilities located in California (note – in 2015 natural gas comes into the program and captures plants emitting < 25,000 metric tons CO_2e)	≥ 25,000 metric tons of CO_2e	January 1, 2013
Electricity Importers	Imports from Specified Sources	A. All emissions from imports generated by sources with ≥ 25,000 metric tons of CO_2e emissions	A. January 1, 2013
		B. All emissions are covered. There is no threshold.	B. January 1, 2015
	Imports from Unspecified Sources	All imports from unspecified sources are included; there is no threshold.	January 1, 2015
Electricity- Self-Generation	Stationary Combustion Emissions	≥ 25,000 metric tons of CO_2e	January 1, 2013

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Sector	Emission Source	Applicability Threshold	When Covered
Glass Production	Process and Stationary Combustion Emissions	≥ 25,000 metric tons of CO_2e	January 1, 2013
Hydrogen Production	Stationary Combustion	≥ 25,000 metric tons of CO_2e	January 1, 2013
Hydrogen Production	Process Emissions	≥ 25,000 metric tons of CO_2e	January 1, 2013
Iron and Steel Production	Stationary Combustion Emissions	≥ 25,000 metric tons of CO_2e	January 1, 2013
Iron and Steel Production	Process Emissions	≥ 25,000 metric tons of CO_2e	January 1, 2013
Lime Manufacturing	Stationary Combustion Emissions	≥ 25,000 metric tons of CO_2e	January 1, 2013
Lime Manufacturing	Process Emissions	≥ 25,000 metric tons of CO_2e	January 1, 2013
Nitric Acid Production	Stationary Combustion Emissions	≥ 25,000 metric tons of CO_2e	January 1, 2013
Nitric Acid Production	Process Emissions	≥ 25,000 metric tons of CO_2e	January 1, 2013
Petroleum and Natural Gas Systems	Stationary Combustion	≥ 25,000 metric tons of CO_2e	January 1, 2013
Petroleum and Natural Gas Systems	Process Vented Emissions Flares and Destruction Devices	≥ 25,000 metric tons of CO_2e	January 1, 2013

Sector	Emission Source	Applicability Threshold	When Covered
Petroleum Refining	Stationary Combustion Emissions	≥ 25,000 metric tons of CO_2e	January 1, 2013
	Process Emissions		
	Catalyst Regeneration		
	Flares and Destruction Devices		
Pulp and Paper Manufacturing	Stationary Combustion Emissions	≥ 25,000 metric tons of CO_2e	January 1, 2013
	Process Emissions		
Stationary Combustion	Stationary Combustion Emissions	≥ 25,000 metric tons of CO_2e	January 1, 2013
Suppliers of Liquefied Petroleum Gas	Combustion Emissions from Total Volume of Liquefied Petroleum Gas Supplied	≥ 25,000 metric tons of CO_2e	January 1, 2015
Suppliers of Natural Gas	Combustion Emissions from the Total Volume of Natural Gas Delivered to Non-Covered Entities	≥ 25,000 metric tons of CO_2e	January 1, 2015
Suppliers of RBOB and Distillate Fuel Oil	Combustion Emissions from Total Volume of RBOB and Distillate Fuel Oil Supplied	≥ 25,000 metric tons of CO_2e	January 1, 2015

2.1 How Do I Know if My CO_2e Emissions Exceed the Applicability Threshold?

The inclusion threshold is based on the subset of emissions reported and verified under the MRR that generate a compliance obligation. See section 95852 of the Cap-and-Trade Regulation for more details on emissions categories used to calculate a compliance obligation. For most facilities, the total emissions for any year during the period 2008–2010 (excluding biomass CO_2 emissions) will give a rough estimate for comparison with the threshold.

There may be situations in which a facility's emissions for comparison with the threshold will be slightly different due to the presence of excluded or newly included process, vented, or fugitive emissions (see the examples).

Example 2.1.1

Refineries reported fugitive emissions under the 2008–2010 MRR, but these emissions do not apply toward the threshold for compliance under the Cap-and-Trade Regulation and should be subtracted when comparing 2008–2010 emissions with the threshold.

Example 2.1.2

Glass Manufacturers would have only reported combustion emissions from 2008-2010, and I will now need to include their process emissions using the methods in the revised MRR for comparison to the threshold.

Additionally, biomass-derived fuels that were reported in 2008–2010 have to meet stricter standards beginning 2011, and may count toward the compliance obligation in some situations.

Electricity importers that imported any amount of electricity from an unspecified source between years 2008–2010 are automatically a covered entity. Electricity importers that imported electricity from specified sources between years 2008–2010 are covered entities if any of the sources emitted more than 25,000 $MTCO_2e$. In almost all cases specified imports will be from large generators that exceed 25,000 $MTCO_2e$ emissions. So a safe assumption would be that any entity with specified imports will be a covered entity.

If your facility meets the applicability requirements found in section 95101 of the MRR for both source category and emissions threshold, then it must report. Any facility that fits into one or more of the categories in subsection 95101 for calendar year 2011 or later must submit an emissions data report for that year and for subsequent calendar years, except as provided in the report cessation provisions of subsection 95101(h) in the MRR. The emissions data report must cover all source categories and GHGs for

which calculation methods are provided or referenced in the MRR for the facility type. More information about the MRR can be found at http://www.arb.ca.gov/cc/reporting/ghg-rep/ghg-rep.htm or by contacting sector-specific staff listed at http://www.arb.ca.gov/cc/reporting/ghg-rep/ghg-contacts.htm.

Key Definition
"Emissions Data Report" means the report that provides the information required by the MRR, prepared by an operator or supplier each year and submitted by electronic means to ARB.

2.2 Preliminary Draft List of Covered Entities

A preliminary list of entities determined to be covered by the Cap-and-Trade Regulation is listed at http://www.arb.ca.gov/cc/capandtrade/covered_entities_list.pdf.

This list includes covered entities with certified non-biomass emissions from 2008 and 2010 and verified emissions from 2009 that meet or exceed the specified thresholds, and is subject to change based on further review and verified emissions reports from 2010 and 2011. The list does not include entities covered starting in 2015, such as fuel suppliers. The preliminary list of covered entities was developed using current MRR data that were not collected explicitly to support the Cap-and-Trade Program. Amendments to the MRR, which are effective January 1, 2012, may modify the list of covered entities (because, for example, some biomass and process emissions have an obligation under the Cap-and-Trade Regulation but were not previously required to be reported).

This list neither substitutes for nor supplements the provisions of the Cap-and-Trade Regulation and is intended to provide information about program coverage based on the best available information as of the creation date indicated in the header of the file. An entity not listed here should not assume that it is not covered by the Cap-and-Trade Regulation.

2.3 Other Requirements Affecting Applicability

2.3.1. Eligibility Requirements for Biomass-Derived Fuels

Emissions from combustion of biomass-derived fuel which meets the requirements of 95852.1.1 will not be subject to a compliance obligation when reported as biomass CO_2 in an emissions data report that has received a positive or qualified positive emissions data verification statement and determined as exempt pursuant to section 95852.2 of the Regulation and 95103(g) of the MRR.

Contracts for purchasing any biomass-derived fuel must be executed prior to January 1, 2012, and remain in effect or have been renegotiated with the same California operator within one year of contract expiration. The delivery of the fuel under the contract must commence by 90 days after the execution date of the signed contract, by January 1, 2012, or 10 days after the date on which the California Energy Commission provides

notice that the operator's electricity generating facility is certified as eligible for California's Renewables Portfolio Standard for the contracted biomass-derived fuel, or cannot be so certified, provided that the application for certification was submitted to the CEC before January 1, 2012.

The fuel being provided under a contract must meet the provisions listed in section 95852.1.1(2) through (4).

As part of a biomass-derived fuel's eligibility to avoid a compliance obligation, no party may sell, trade, give away, claim, or otherwise dispose of any of the carbon credits, carbon benefits, carbon emissions reductions, carbon offsets, or allowances, howsoever entitled, attributed to the fuel production that would prevent the resulting combustion from not having a compliance obligation. This section was necessary to specify that Generation of Renewable Energy Credits is allowable and will not prevent a biomass-derived fuel that meets this section's requirements from being exempt from a compliance obligation. However, to prevent double-counting of the environmental attributes of utilizing biomass-derived fuel, the section prevents another source from claiming the benefits realized or using the benefits to fulfill a compliance obligation, or for any other purposes.

Attachment H

Additional Documentation Attachment to Comment 1-G90

ESA

CALIFORNIA

Hottest Spot
Death Valley ... 114
Coldest Spot
Boca Reservoir ... 29
STATE EXTREMES FOR SUNDAY

NORTHWEST
Low clouds followed by sunshine today; however, hazy sun toward Ukiah.

City	Today	Tue.	Wed.
Crescent City	55/53	62/51	58/52
Eureka	63/52	65/53	62/53
Ft. Bragg	69/55	72/55	69/54
Trinidad	62/52	62/52	59/52
Ukiah	86/53	86/52	83/51

SIERRA NEVADA
Plenty of sunshine today; pleasant toward Mammoth Lakes.

City	Today	Tue.	Wed.
Bishop	96/53	94/52	95/52
Greenville	82/58	84/58	82/55
Mammoth	81/39	80/37	79/38
Tahoe Vly.	75/36	76/41	78/38
Yosemite	81/53	81/51	81/51

CENTRAL VALLEY
Plenty of sunshine near Bakersfield today; hazy sun elsewhere.

City	Today	Tue.	Wed.
Bakersfield	93/65	90/65	92/64
Fresno	93/62	90/61	91/61
Merced	88/58	87/57	87/57
Modesto	87/58	86/59	86/58
Sacto.	82/57	82/57	81/56

BAY AREA
Low clouds followed by sunshine and cool today.

City	Today	Tue.	Wed.
Napa	76/56	75/56	75/55
Oakland	70/60	70/59	70/58
San Fran.	70/59	71/59	72/58
San Jose	77/60	76/59	76/60
Santa Cruz	68/59	67/60	67/58

CENTRAL COAST
Clouds, then sun today; however, sunshine toward Santa Barbara.

City	Today	Tue.	Wed.
Lompoc	70/56	70/55	67/56
Monterey	67/59	68/58	66/56
Pismo Bch.	69/59	69/59	70/57
S. L. Obispo	74/60	74/59	74/56
Santa Barb.	75/60	75/59	74/58

NORTHERN DESERT
Plenty of sunshine today. Clear tonight. Sunny tomorrow.

City	Today	Tue.	Wed.
Baker	104/70	100/71	102/71
Barstow	102/69	99/69	100/69
Death Vly.	108/85	105/80	105/82
Lancaster	93/63	91/64	93/64
Victorville	91/58	89/58	91/60

SOUTHERN MTS. & VALLEYS
Patchy fog, then sun today; however, mostly sunny toward Idyllwild.

City	Today	Tue.	Wed.
Big Bear	77/42	75/43	75/43
Idyllwild	83/57	82/59	85/59
L. Arrow'd	77/53	76/52	78/53
Monrovia	80/69	80/62	84/61
Riverside	89/61	88/60	90/59

SOUTH COAST
Low clouds followed by sunshine today.

City	Today	Tue.	Wed.
Long Beach	79/68	80/67	82/66
Oceanside	78/64	80/63	80/63
San Diego	78/72	79/69	80/69
Santa Mon.	75/64	75/64	76/62
Ventura	72/62	73/61	73/60

SOUTHERN DESERT
Mostly sunny today; very warm toward Needles and El Centro.

City	Today	Tue.	Wed.
29 Palms	103/70	99/71	101/71
Blythe	108/76	105/77	106/79
El Centro	108/78	107/78	105/77
Needles	110/83	108/83	108/84
Palm Spgs.	106/77	104/76	105/77

COAST
Today: High: 74° Low: 66°

Clouds breaking.

Tuesday: H: 76° L: 66°
Low clouds, then sun.
Wednesday: H: 77° L: 66°
Low clouds, then sun.
Thursday: H: 77° L: 67°
Low clouds, then sun.
Friday: H: 79° L: 66°
Mostly sunny.

INLAND
Today: High: 89° Low: 61°

Patchy fog, then sun.

Tuesday: H: 88° L: 60°
Plenty of sunshine.
Wednesday: H: 90° L: 59°
Mostly sunny.
Thursday: H: 92° L: 60°
Plenty of sun.
Friday: H: 94° L: 61°
Mostly sunny.

MOUNTAINS
Today: High: 77° Low: 42°

Sunny and nice.

Tuesday: H: 75° L: 43°
Plenty of sun.
Wednesday: H: 75° L: 43°
Mostly sunny; pleasant.
Thursday: H: 76° L: 45°
Sunny and pleasant.
Friday: H: 78° L: 43°
Mostly sunny; pleasant.

LOW DESERT
Today: High: 106° Low: 77°

Mostly sunny.

Tuesday: H: 104° L: 76°
Mostly sunny.
Wednesday: H: 105° L: 77°
Sunshine and very warm.
Thursday: H: 108° L: 78°
Sunny and very warm.
Friday: H: 109° L: 80°
Sunshine and very warm.

Temperatures are today's highs and tonight's lows.

Map locations:
Lake Arrowhead 77/53
Las Vegas 101/76
Pasadena 82/64
Big Bear Lake 77/42
Laughlin 108/78
Los Angeles 81/67
San Bernardino 89/61
Redlands 90/58
Needles 110/83
Ontario 87/64
Fontana 88/65
Colton 90/60
Yucaipa 86/64
LA Int'l Airport 75/66
Anaheim 82/68
Riverside 89/61
Moreno Valley 90/62
Banning 90/59
Tram 69/55
Palm Springs 106/77
Long Beach 79/68
Corona 90/64
Santa Ana 78/68
Perris 90/61
Hemet 92/58
Idyllwild 83/57
Rancho Mirage 107/77
Indio 107/
Newport Beach 74/66
Lake Elsinore 89/64
Murrieta 86/57
La Quinta 107/76
Temecula 86/55
Oceanside 78/64
Escondido 83/60
San Diego 78/72

INLAND TODAY

Patchy low clouds and fog early, then sunny, except plenty of sunshine near San Bernardino. Winds northwest 4-8 mph.
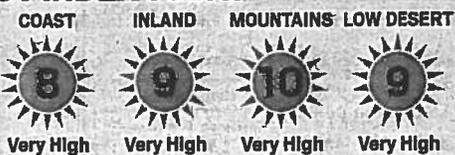
UV INDEX TODAY

COAST	INLAND	MOUNTAINS	LOW DESERT
8	9	10	9
Very High	Very High	Very High	Very High

The higher the AccuWeather.com UV Index™ number, the greater the need for eye and skin protection.

SURF REPORT TODAY

	Waves	Wind speed	Direction	Water temp.
Los Angeles	1-3 ft.	4-8 kts.	SSW	72
Orange County	4-8 ft.	4-8 kts.	WNW	71
San Diego	1-3 ft.	6-12 kts.	WNW	73

TIDE REPORT

	Today Highs	Lows	Tuesday Highs	Lows
Los Angeles	10:52 a.m.	4:37 a.m.	11:19 a.m.	5:03 a.m.
Outer Harbor	10:26 p.m.	4:22 p.m.	11:00 p.m.	4:59 p.m.
Newport Bch.	10:43 a.m.	4:37 a.m.	11:10 a.m.	5:03 a.m.
Balboa Pier	10:17 p.m.	4:22 p.m.	10:51 p.m.	4:59 p.m.
San Diego	10:45 a.m.	4:32 a.m.	11:12 a.m.	4:58 a.m.
Broadway	10:25 p.m.	4:20 p.m.	10:58 p.m.	4:55 p.m.

Online PE.com/weather/

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Air Quality Forecast
Pollution standard index measures air quality by particles in the air.

○ NOT AVAILABLE		
● GOOD	0-50 PSI
○ MODERATE	51-100 P
● UNHEALTHY FOR SENSITIVE GROUPS	101-150
● UNHEALTHY	151-200
● VERY UNHEALTHY	201-300
● HAZARDOUS	301-500

Sources: South Coast Air Quality Management District; San Diego County Air Pollution Control District; Clark County NV Department of Air Quality

ALMANAC

Statistics for Sun. Season begins Oct. 1	Temperatures Hi/Lo	Normal Hi/Lo	24 hrs. through 4 p.m.	Precipitation Season to date	Norm seas tot
Beaumont	88/57	97/60	0.00	7.23	19.
Big Bear Lake	78/48	79/46	0.00	9.45	20.
Blythe	106/83	106/79	0.00	0.97	3.
Corona	92/58	94/59	0.00	2.10	13.
Fontana	89/62	92/60	0.00	5.82	9
Hemet	91/58	98/60	0.00	7.18	11.
Highland	90/59	97/63	0.00	9.74	13.
Idyllwild	83/51	85/53	0.00	8.37	26
Lake Arrowhead	81/57	80/56	0.00	13.91	39
Lake Elsinore	94/59	99/62	0.00	3.78	12.
Menifee	88/63	98/59	0.00	3.62	11
Moreno Valley	91/61	95/63	0.00	4.50	9.
Murrieta	86/63	95/61	0.00	4.29	11
Ontario	89/65	94/65	0.00	2.46	15.
Palm Springs	106/77	105/77	0.00	2.80	5.
P.S. Tram	72/55	84/54	0.00	9.35	11.
Redlands	90/62	96/62	0.00	3.98	13
Rialto	91/64	97/63	0.00	6.51	13.
Riverside	89/60	95/62	0.00	2.53	10.
San Bernardino	93/62	97/64	0.00	6.33	16.
Temecula	89/65	82/63	0.00	5.89	11.
Thermal	109/82	105/72	0.00	0.53	3.
Yucaipa	84/59	92/60	0.00	7.65	9.

CALIFORNIA

Hottest Spot
Death Valley   115
Coldest Spot
Bodie State Park   30
STATE EXTREMES FOR WEDNESDAY

NORTHWEST
Low clouds followed by sunshine today, except hazy sun toward Ukiah.

City	Today	Fri.	Sat.
Crscnt. City	60/52	63/52	65/53
Eureka	61/53	63/51	64/53
Ft. Bragg	66/52	70/52	71/53
Trinidad	59/53	62/50	63/53
Ukiah	84/51	89/51	92/51

SIERRA NEVADA
Plenty of sunshine today, but hazy sun toward Greenville.

City	Today	Fri.	Sat.
Bishop	97/54	97/52	96/56
Greenville	84/54	83/55	85/58
Mammoth	83/42	82/40	81/41
Tahoe Vly.	79/38	77/35	78/41
Yosemite	83/51	81/50	83/51

CENTRAL VALLEY
Plenty of sunshine near Bakersfield today; hazy sun elsewhere.

City	Today	Fri.	Sat.
Bakersfield	94/64	92/65	95/66
Fresno	94/61	92/61	94/63
Merced	89/56	88/56	91/57
Modesto	88/56	87/56	91/58
Sacto	83/55	84/54	88/55

BAY AREA
Low clouds giving way to sunshine today.

City	Today	Fri.	Sat.
Napa	76/53	77/52	81/52
Oakland	69/57	67/55	69/54
San Fran.	70/56	68/53	70/55
San Jose	77/58	77/56	80/57
Santa Cruz	69/57	68/55	66/55

CENTRAL COAST
Low clouds followed by sunshine today.

City	Today	Fri.	Sat.
Lompoc	69/54	68/53	65/54
Monterey	67/56	65/54	66/53
Pismo Bch.	71/55	70/54	70/55
S. L. Obispo	76/55	75/54	75/54
Santa Barb.	75/61	75/59	74/59

NORTHERN DESERT
Plenty of sunshine today. A moonlit sky tonight.

City	Today	Fri.	Sat.
Baker	105/75	103/73	103/74
Barstow	103/72	101/69	101/70
Death Vly.	111/89	108/82	106/90
Lancaster	95/66	94/64	94/65
Victorville	93/59	91/60	92/62

SOUTHERN MTS. & VALLEYS
Sunny today; clouds, then sun Monrovia.

City	Today	Fri.	Sat.
Big Bear	77/46	75/42	76/41
Idyllwild	85/60	84/59	86/59
L. Arrowh'd	79/54	78/53	79/53
Monrovia	83/66	82/66	83/66
Riverside	91/58	90/57	90/58

SOUTH COAST
Low clouds giving way to sunshine today.

City	Today	Fri.	Sat.
Long Beach	82/71	81/69	82/70
Oceanside	80/67	79/65	79/64
San Diego	80/70	79/68	79/68
Santa Mon.	77/68	76/67	76/67
Ventura	74/62	75/61	74/62

SOUTHERN DESERT
Sunny today; very warm toward El Centro. A moonlit sky tonight.

City	Today	Fri.	Sat.
29 Palms	103/74	101/72	101/72
Blythe	106/82	105/79	106/80
El Centro	107/80	107/74	105/77
Needles	109/87	109/84	108/85

COAST
Today: High: 77° Low: 71°

Clouds breaking for sun.

Friday: H: 77° L: 70°
Low clouds, then sun.
Saturday: H: 76° L: 70°
Clouds breaking.
Sunday: H: 75° L: 70°
Clouds breaking for sun.
Monday: H: 74° L: 71°
Clouds breaking.

INLAND
Today: High: 91° Low: 58°

Plenty of sun.

Friday: H: 90° L: 57°
Plenty of sunshine.
Saturday: H: 90° L: 58°
Sunny.
Sunday: H: 90° L: 58°
Brilliant sunshine.
Monday: H: 87° L: 64°
Abundant sunshine.

MOUNTAINS
**Today: High: 77° Low: 46°**
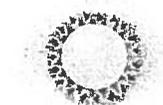
Sunny and pleasant.

Friday: H: 75° L: 42°
Sunny and beautiful.
Saturday: H: 76° L: 41°
Sunny and pleasant.
Sunday: H: 74° L: 43°
Nice with sunshine.
Monday: H: 73° L: 41°
Sunshine.

LOW DESERT
Today: High: 108° Low: 79°

Sunny.

Friday: H: 106° L: 75°
Mostly sunny and warm.
Saturday: H: 106° L: 76°
Sunny and very warm.
Sunday: H: 106° L: 75°
Sunny and very warm.
Monday: H: 103° L: 74°
Mostly sunny.

Lake Arrowhead 79/54
Las Vegas 103/80
Pasadena 86/67
Big Bear Lake 77/46
Laughlin 107/85
San Bernardino 92/61
Redlands 92/59
Needles 109/87
Los Angeles 83/68
Ontario 91/66
Fontana 91/65
Colton 93/61
Yucaipa 88/56
LA Int'l Airport 77/71
Anaheim 86/70
Riverside 91/58
Moreno Valley 92/59
Banning 92/62
Tram 70/58
Palm Springs 108/79
Long Beach 82/71
Corona 92/65
Perris 91/63
Indio 108/7
Santa Ana 80/72
Hemet 94/60
Idyllwild 85/60
Rancho Mirage 106/81
Newport Beach 77/71
Lake Elsinore 91/64
Murrieta 89/59
La Quinta 108/79
Temecula 88/58
Blythe 106/82
Mecca 107/79
Oceanside 80/67
Escondido 85/62
San Diego 80/70

Temperatures are today's highs and tonight's lows.

INLAND TODAY
Plenty of sunshine near San Bernardino and Corona; low clouds followed by sunshine towards Ontario and near Temecula. Winds northwest 6-12 mph.

UV INDEX TODAY

COAST	INLAND	MOUNTAINS	LOW DESERT
8	9	10	9
Very High	Very High	Very High	Very High

The higher the AccuWeather.com UV Index™ number, the greater the need for eye and skin protection.

SURF REPORT TODAY

	Waves	Wind speed	Direction	Water temp.
Los Angeles	1-3 ft.	6-12 kts.	SW	73
Orange County	2-4 ft.	4-8 kts.	W	72
San Diego	2-4 ft.	6-12 kts.	WNW	76

TIDE REPORT

	Today		Friday	
	Highs	Lows	Highs	Lows
Los Angeles	9:17 a.m.	2:50 a.m.	9:41 a.m.	3:19 a.m.
Outer Harbor	8:20 p.m.	2:15 p.m.	8:52 p.m.	2:46 p.m.
Newport Bch.	9:08 a.m.	2:50 a.m.	9:32 a.m.	3:19 a.m.
Balboa Pier	8:11 p.m.	2:15 p.m.	8:43 p.m.	2:46 p.m.
San Diego	9:07 a.m.	2:43 a.m.	9:30 a.m.	3:11 a.m.
Broadway	8:18 p.m.	2:11 p.m.	8:51 p.m.	2:44 p.m.

Online PE.com/weather/

Air Quality Forecast
Pollution standard index measures the air quality by particles in the air.

○ NOT AVAILABLE	
○ GOOD	0-50 PSI
◐ MODERATE	51-100 PSI
◑ UNHEALTHY FOR SENSITIVE GROUPS	101-150 PS
◕ UNHEALTHY	151-200 PS
● VERY UNHEALTHY	201-300 P
● HAZARDOUS	301-500 P

Sources: South Coast Air Quality Management District; San Diego County Air Pollution Control District; Clark County; NV Department of Air Quality

ALMANAC

Statistics for Wed.	Temperatures		Precipitation		
Season begins Oct. 1	HI/Lo	Normal HI/Lo	24 hrs. through 4 p.m.	Season to date	Norma seaso tota
Beaumont	90/63	97/60	0.00	7.23	19.3
Big Bear Lake	77/54	79/47	0.00	9.45	20.1
Blythe	106/84	107/79	0.00	0.97	3.8
Corona	91/61	95/60	0.00	2.10	13.3
Fontana	92/68	93/61	0.00	5.82	9.1
Hemet	99/64	98/60	0.00	7.18	11.7
Highland	91/65	98/63	0.00	9.74	13.9
Idyllwild	85/57	85/54	0.00	8.37	26.1
Lake Arrowhead	82/63	81/57	0.00	13.91	39.6
Lake Elsinore	99/67	99/62	0.00	3.78	12.4
Menifee	91/68	99/59	0.00	3.62	11.1
Moreno Valley	95/63	96/63	0.00	4.50	9.4
Murrieta	89/64	95/61	0.00	4.29	11.6
Ontario	93/68	94/65	0.00	2.46	15.0
Palm Springs	108/84	106/77	0.00	2.80	5.6
P.S. Tram	72/57	84/54	0.00	9.35	11.7
Redlands	95/66	96/62	0.00	3.98	13.2
Rialto	92/67	98/63	0.00	6.51	13.9
Riverside	93/64	95/62	0.00	2.53	10.3
San Bern	05/68	97/64	0.00	6.33	16
Tem				5.80	

10 | **B WEATHER** | THE PRESS-ENTERPRISE » PE.COM

CALIFORNIA

Hottest Spot
Death Valley 117
Coldest Spot
Bodie State Park 30
STATE EXTREMES FOR TUESDAY

NORTHWEST
Low clouds followed by sunshine today; however, hazy sun toward Ukiah.

City	Today	Thu.	Fri.
Crscnt. City	62/53	61/53	65/53
Eureka	64/53	62/52	63/50
Ft Bragg	68/54	69/52	70/52
Trinidad	61/53	60/52	61/50
Ukiah	91/51	87/51	90/51

SIERRA NEVADA
Mostly sunny today. Hazy tonight.

City	Today	Thu.	Fri.
Bishop	97/53	97/54	97/57
Greenville	87/56	86/55	83/54
Mammoth	82/41	82/42	81/40
Tahoe Vly.	79/38	79/37	78/37
Yosemite	84/53	84/53	83/52

CENTRAL VALLEY
Plenty of sunshine near Bakersfield today; hazy sun elsewhere.

City	Today	Thu.	Fri.
Bakersfield	95/68	95/67	94/66
Fresno	95/63	95/62	94/63
Merced	91/58	90/57	90/57
Modesto	90/59	89/58	89/58
Sacto	86/57	85/56	85/55

BAY AREA
Low clouds giving way to sunshine today.

City	Today	Thu.	Fri.
Napa	78/54	77/54	78/52
Oakland	70/58	69/57	68/54
San Fran.	71/57	70/57	68/54
San Jose	78/57	78/57	77/55
Santa Cruz	68/57	68/58	67/54

CENTRAL COAST
Low clouds followed by sunshine today.

City	Today	Thu.	Fri.
Lompoc	70/54	69/54	65/55
Monterey	67/56	67/56	65/53
Pismo Bch.	70/55	70/56	70/54
S. L. Obispo	76/56	75/56	75/53
Santa Barb.	74/59	75/59	74/59

NORTHERN DESERT
Plenty of sunshine today. Clear tonight. Plenty of sunshine tomorrow.

City	Today	Thu.	Fri.
Baker	104/77	104/74	104/73
Barstow	103/73	103/71	101/70
Death Vly.	111/88	110/84	109/85
Lancaster	95/65	95/65	94/65
Victorville	93/60	93/59	92/61

SOUTHERN MTS. & VALLEYS
Sunny today; clouds, then sun Monrovia.

City	Today	Thu.	Fri.
Big Bear	76/45	76/43	74/42
Idyllwild	84/60	84/60	85/59
L. Arrowh'd	78/56	79/53	78/52
Monrovia	84/64	83/62	83/62
Riverside	92/61	91/59	90/57

SOUTH COAST
Low clouds giving way to sunshine today.

City	Today	Thu.	Fri.
Long Beach	82/68	82/67	82/66
Oceanside	81/66	80/65	80/63
San Diego	80/71	79/69	79/68
Santa Mon.	78/67	76/64	76/64
Ventura	74/63	74/62	74/62

SOUTHERN DESERT
Sunshine today. Clear tonight. Plenty of sunshine tomorrow.

City	Today	Thu.	Fri.
29 Palms	102/76	102/74	102/72
Blythe	105/82	106/81	106/79
El Centro	106/80	107/79	106/78
Needles	108/88	109/87	109/85

COAST
Today: High: 78° Low: 68°

Low clouds, then sun.

Thursday: H: 78° L: 67°
Clouds breaking for sun.
Friday: H: 77° L: 67°
Low clouds, then sun.
Saturday: H: 77° L: 68°
Clouds breaking.
Sunday: H: 77° L: 68°
Clouds breaking for sun.

INLAND
Today: High: 92° Low: 61°

Plenty of sunshine.

Thursday: H: 91° L: 59°
Sunny.
Friday: H: 90° L: 57°
Sunny.
Saturday: H: 91° L: 58°
Sunny.
Sunday: H: 92° L: 60°
Brilliant sunshine.

MOUNTAINS
**Today: High: 76° Low: 45°**

Plenty of sun.

Thursday: H: 76° L: 43°
Sunny and beautiful.
Friday: H: 74° L: 42°
Pleasant with sunshine.
Saturday: H: 76° L: 42°
Sunny and pleasant.
Sunday: H: 75° L: 42°
Nice with sunshine.

LOW DESERT
Today: High: 106° Low: 8

Sunshine.

Thursday: H: 107° L: 7
Plenty of sunshine.
Friday: H: 106° L: 7
Mostly sunny and warn
Saturday: H: 106° L: 7
Sunny and very warm
Sunday: H: 106° L: 7
Sunny and very warm

Temperatures are today's highs and tonight's lows.

Map cities

Lake Arrowhead 78/56
Pasadena 86/65
Big Bear Lake 76/45
San Bernardino 93/63
Redlands 93/61
Las Vegas 100/81
Laughlin 105/85
Needles 108/8
Los Angeles 83/66
Ontario 91/63
Fontana 91/64
Colton 94/63
Yucaipa 89/58
LA Int'l Airport 78/67
Anaheim 85/67
Riverside 92/61
Moreno Valley 93/62
Banning 92/63
Tram 69/57
Palm Spri 106/80
Long Beach 82/68
Corona 92/64
Santa Ana 81/69
Perris 92/61
Hemet 94/62
Idyllwild 84/60
Rancho Mirage 107/81
La Quinta 106/80
Newport Beach 78/68
Lake Elsinore 97/62
Murrieta 89/61
Temecula 88/60
Oceanside 81/66
Escondido 85/63
San Diego 80/71

INLAND TODAY
Plenty of sunshine near San Bernardino and Corona; low clouds followed by sunshine towards Ontario and near Temecula. Winds northwest 6-12 mph.

UV INDEX TODAY

COAST	INLAND	MOUNTAINS	LOW DESERT
8	10	10	9
Very High	Very High	Very High	Very High

The higher the AccuWeather.com UV Index™ number, the greater the need for eye and skin protection.

SURF REPORT TODAY

	Waves	Wind speed	Direction	Water temp.
Los Angeles	1-3 ft.	6-12 kts.	SW	73
Orange County	3-5 ft.	3-6 kts.	SW	72
San Diego	1-3 ft.	6-12 kts.	WNW	75

TIDE REPORT

	Today		Thursday	
	Highs	Lows	Highs	Lows
Los Angeles	8:52 a.m.	2:18 a.m.	9:17 a.m.	2:50 a.m.
Outer Harbor	7:46 p.m.	1:41 p.m.	8:20 p.m.	2:15 p.m.
Newport Bch.	8:43 a.m.	2:18 a.m.	9:08 a.m.	2:50 a.m.
Balboa Pier	7:37 p.m.	1:41 p.m.	8:11 p.m.	2:15 p.m.
San Diego	8:43 a.m.	2:13 a.m.	9:07 a.m.	2:43 a.m.
Broadway	7:43 p.m.	1:36 p.m.	8:18 p.m.	2:11 p.m.

Online PE.com/weather/

Air Quality Forecast
Pollution standard index measures air quality by particles in the air.

NOT AVAILABLE	
GOOD	0-50
MODERATE	51-100
UNHEALTHY FOR SENSITIVE GROUPS	101-15
UNHEALTHY	151-2
VERY UNHEALTHY	201-3
HAZARDOUS	301

Sources: South Coast Air Quality Management Dist; San Diego County Air Pol Control District; Clark Co NV Department of Air Qu

ALMANAC

Statistics for Tue. Season begins Oct. 1	Temperatures HI/Lo	Normal HI/Lo	Precipitation 24 hrs. through 4 p.m.	Season to date
Beaumont	92/64	97/60	0.00	7.23
Big Bear Lake	77/55	79/47	0.00	9.45
Blythe	106/86	107/80	0.00	0.97
Corona	90/62	95/60	0.00	2.10
Fontana	90/67	93/61	0.00	5.82
Hemet	95/64	98/60	0.00	7.18
Highland	91/66	98/64	0.00	9.74
Idyllwild	87/57	85/54	0.00	8.37
Lake Arrowhead	82/61	81/57	0.00	13.91
Lake Elsinore	99/67	99/63	0.00	3.78
Menifee	92/69	99/59	0.00	3.62
Moreno Valley	95/66	96/63	0.00	4.50
Murrieta	88/63	95/61	0.00	4.29
Ontario	91/67	94/65	0.00	2.46
Palm Springs	108/83	106/78	0.00	2.80
P.S. Tram	74/58	84/54	0.00	9.35
Redlands	93/67	96/62	0.00	3.98
Rialto	92/66	98/64	0.00	6.51
Riverside	92/64	95/62	0.00	2.53
San Bernardino	95/68	97/64	0.00	6.33
Temecula	89/63	82/63	0.00	5.89
Thermal	110/85	106/73	0.00	0.53
Yucaipa	87/65	92/60	0.00	7.65

CALIFORNIA

Hottest Spot
Death Valley 112

Coldest Spot
Bodie State Park 25

STATE EXTREMES FOR FRIDAY

NORTHWEST
Low clouds followed by sunshine today; however, hazy sun toward Ukiah.

City	Today	Sun.	Mon.
Crescent City	62/52	62/54	63/52
Eureka	63/51	63/53	62/52
Ft. Bragg	69/52	71/53	69/53
Trinidad	61/51	62/52	61/52
Ukiah	91/51	89/52	85/51

SIERRA NEVADA
Plenty of sun today; pleasant. Hazy tonight.

City	Today	Sun.	Mon.
Bishop	97/52	97/50	95/53
Greenville	85/57	85/57	82/55
Mammoth	82/37	81/35	79/36
Tahoe Vly.	78/37	77/40	76/39
Yosemite	83/51	82/48	82/50

CENTRAL VALLEY
Sunny near Bakersfield today; hazy sun elsewhere. Hazy tonight.

City	Today	Sun.	Mon.
Bakersfield	94/67	95/65	95/64
Fresno	94/63	95/61	94/62
Merced	91/57	91/55	89/57
Modesto	90/58	90/56	88/58
Sacto	87/55	85/55	82/56

BAY AREA
Low clouds followed by sunshine today.

City	Today	Sun.	Mon.
Napa	79/52	77/54	75/55
Oakland	70/56	69/57	68/57
San Fran.	70/55	69/57	69/57
San Jose	79/57	78/58	77/60
Santa Cruz	68/55	67/58	67/59

CENTRAL COAST
Clouds, then sun today; however, sunshine toward Santa Barbara.

City	Today	Sun.	Mon.
Lompoc	69/53	69/53	65/56
Monterey	66/55	65/56	67/56
Pismo Bch.	71/55	69/54	69/57
S. L. Obispo	76/55	75/54	73/56
Santa Barb.	74/59	74/58	74/59

NORTHERN DESERT
Mostly sunny today. Clear tonight. Plenty of sunshine tomorrow.

City	Today	Sun.	Mon.
Baker	104/74	104/73	106/72
Barstow	103/70	103/72	102/69
Death Vly.	110/87	109/87	107/82
Lancaster	94/64	95/65	95/63
Victorville	93/58	93/60	93/61

SOUTHERN MTS. & VALLEYS
Sunny today; clouds, then sun Monrovia.

City	Today	Sun.	Mon.
Big Bear	77/43	78/42	77/41
Idyllwild	84/59	86/60	86/57
L. Arrow'd	78/54	79/53	79/52
Monrovia	82/66	83/65	83/69
Riverside	90/58	91/58	90/64

SOUTH COAST
Low clouds giving way to sunshine today.

City	Today	Sun.	Mon.
Long Beach	81/70	82/69	81/68
Oceanside	79/63	80/64	79/64
San Diego	79/72	80/72	79/72
Santa Mon.	77/67	76/66	75/65
Ventura	74/63	74/61	73/61

SOUTHERN DESERT
Mostly sunny today; very warm near Palm Springs and toward Needles.

City	Today	Sun.	Mon.
29 Palms	102/73	102/72	102/71
Blythe	105/81	106/77	105/76
El Centro	106/79	107/75	107/75
Needles	108/87	109/83	109/82
Palm Spgs.	106/78	107/76	106/76

COAST
Today: High: 76° Low: 70°

Clouds breaking.

Sunday: H: 77° L: 70°
Clouds breaking for sun.

Monday: H: 75° L: 66°
Clouds breaking.

Tuesday: H: 76° L: 67°
Low clouds, then sun.

Wednesday: H: 76° L: 70°
Low clouds, then sun.

INLAND
Today: High: 90° Low: 58°

Plenty of sunshine.

Sunday: H: 91° L: 58°
Plenty of sunshine.

Monday: H: 90° L: 64°
Abundant sunshine.

Tuesday: H: 91° L: 59°
Sunshine.

Wednesday: H: 91° L: 59°
Mostly sunny.

MOUNTAINS
Today: High: 77° Low: 43°

Sunshine and pleasant.

Sunday: H: 78° L: 42°
Sunny and comfortable.

Monday: H: 77° L: 41°
Pleasant with sunshine.

Tuesday: H: 75° L: 43°
Sunny.

Wednesday: H: 76° L: 42°
Beautiful with sunshine.

LOW DESERT
Today: High: 106° Low: 76°

Mostly sunny and warm.

Sunday: H: 107° L: 76°
Sunny and very warm.

Monday: H: 106° L: 76°
Mostly sunny.

Tuesday: H: 106° L: 75°
Mostly sunny and warm.

Wednesday: H: 107° L: 79°
Sunshine and very warm.

Temperatures are today's highs and tonight's lows.

Map locations

Lake Arrowhead 78/54
Las Vegas 102/81
Big Bear Lake 77/42
Laughlin 107/84
Pasadena 85/61
San Bernardino 91/61
Redlands 91/63
Needles 108/87
Los Angeles 82/67
Ontario 90/64
Fontana 90/61
Colton 92/61
Yucaipa 87/56
LA Int'l Airport 77/69
Anaheim 85/68
Riverside 90/58
Moreno Valley 91/60
Banning 91/61
Tram 68/57
Palm Springs 106/78
Long Beach 81/70
Corona 91/56
Indio 106
Santa Ana 79/69
Perris 90/60
Hemet 93/59
Idyllwild 84/59
Rancho Mirage 107/78
Newport Beach 76/70
Lake Elsinore 90/61
Murrieta 86/58
La Quinta 106/77
Temecula 87/56
Blythe 105/82
Mecca 106
Oceanside 79/63
Escondido 84/61
San Diego 79/72

INLAND TODAY

Plenty of sunshine near San Bernardino and Corona; low clouds followed by sunshine towards Ontario and near Temecula. Winds northwest 4-8 mph.

UV INDEX TODAY

COAST	INLAND	MOUNTAINS	LOW DESERT
8	9	10	9
Very High	Very High	Very High	Very High

The higher the AccuWeather.com UV Index™ number, the greater the need for eye and skin protection.

SURF REPORT TODAY

	Waves	Wind speed	Direction	Water temp.
Los Angeles	1-3 ft.	4-8 kts.	SSW	71
Orange County	3-6 ft.	3-6 kts.	W	70
San Diego	1-3 ft.	6-12 kts.	W	75

TIDE REPORT

	Today Highs	Today Lows	Sunday Highs	Sunday Lows
Los Angeles	10:03 a.m.	3:45 a.m.	10:27 a.m.	4:11 a.m.
Outer Harbor	9:23 p.m.	3:17 p.m.	9:54 p.m.	3:49 p.m.
Newport Bch.	9:54 a.m.	3:45 a.m.	10:18 a.m.	4:11 a.m.
Balboa Pier	9:14 p.m.	3:17 p.m.	9:45 p.m.	3:49 p.m.
San Diego	9:53 a.m.	3:38 a.m.	10:18 a.m.	4:05 a.m.
Broadway	9:22 p.m.	3:15 p.m.	9:53 p.m.	3:47 p.m.

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Air Quality Forecast
Pollution standard index measures air quality by particles in the air.

○ NOT AVAILABLE	
● GOOD	0-50 PSI
◐ MODERATE	51-100 P
◑ UNHEALTHY FOR SENSITIVE GROUPS	101-150
● UNHEALTHY	151-200
● VERY UNHEALTHY	201-300
● HAZARDOUS	301-500

Sources: South Coast Air Quality Management District, San Diego County Air Pollution Control District, Clark County, NV Department of Air Quality

ALMANAC

Statistics for Fri, Season begins Oct. 1	Temperatures HI/Lo	Normal HI/Lo	24 hrs: through 4 p.m.	Precipitation Season to date	Norm. seas. tot
Beaumont	87/60	97/60	0.00	7.23	19.4
Big Bear Lake	76/50	79/47	0.00	9.45	20.
Blythe	105/86	106/79	0.00	0.97	3.
Corona	87/57	95/59	0.00	2.10	13.
Fontana	89/65	92/60	0.00	5.82	9.
Hemet	93/61	98/60	0.00	7.18	11.
Highland	90/63	98/63	0.00	9.74	13.
Idyllwild	84/53	85/54	0.00	8.37	26.
Lake Arrowhead	80/63	81/57	0.00	13.91	39.
Lake Elsinore	96/63	99/62	0.00	3.78	12.
Menifee	88/70	99/59	0.00	3.62	11.
Moreno Valley	92/63	96/63	0.00	4.50	9.
Murrieta	84/62	95/61	0.00	4.29	11.
Ontario	89/64	94/65	0.00	2.46	15.
Palm Springs	107/79	106/77	0.00	2.80	5.
P.S. Tram	73/56	84/54	0.00	9.35	11.
Redlands	92/64	96/62	0.00	3.98	13.
Rialto	90/64	98/63	0.00	6.51	13.
Riverside	89/61	95/62	0.00	2.53	10.
San Bernardino	91/66	97/64	0.00	6.33	16.
Temecula	86/66	82/63	0.00	5.89	11.
Thermal	107/73	106/73	0.00	0.53	3.
Yucaipa	84/60	92/60	0.00	7.65	9.

10 ■ **WEATHER** THE PRESS-ENTERPRISE » PE.COM

CALIFORNIA

Hottest Spot
Death Valley 115
Coldest Spot
Bodie State Park 27
STATE EXTREMES FOR THURSDAY

NORTHWEST
Low clouds followed by sunshine today, but hazy sun toward Ukiah.

City	Today	Sat.	Sun.
Crscnt. City	62/51	62/51	63/52
Eureka	62/51	63/52	63/51
Ft. Bragg	67/51	71/51	68/52
Trinidad	61/50	61/52	62/52
Ukiah	88/53	90/51	86/50

SIERRA NEVADA
Plenty of sunshine today; however, hazy sun toward Greenville.

City	Today	Sat.	Sun.
Bishop	97/51	97/52	97/53
Greenville	83/55	85/56	83/54
Mammoth	81/37	82/39	80/38
Tahoe Vly.	77/35	78/39	76/39
Yosemita	81/51	83/50	81/49

CENTRAL VALLEY
Plenty of sunshine near Bakersfield today; hazy sun elsewhere.

City	Today	Sat.	Sun.
Bakersfield	92/65	94/66	96/64
Fresno	92/62	94/62	95/61
Merced	88/57	91/56	91/56
Modesto	87/58	90/57	90/58
Sacto	84/54	87/55	84/55

BAY AREA
Low clouds giving way to sunshine today.

City	Today	Sat.	Sun.
Napa	77/52	78/51	76/54
Oakland	68/55	69/56	68/56
San Fran.	69/55	70/55	69/56
San Jose	77/57	78/57	78/58
Santa Cruz	69/55	67/56	65/57

CENTRAL COAST
Clouds, then sun today, but sunshine toward Santa Barbara.

City	Today	Sat.	Sun.
Lompoc	68/53	69/53	65/55
Monterey	66/54	65/54	66/55
Pismo Bch.	71/54	70/54	68/55
S. L. Obispo	76/55	76/54	73/54
Santa Barb.	75/61	75/60	73/58

NORTHERN DESERT
Abundant sunshine today. Mainly clear tonight. Mostly sunny tomorrow.

City	Today	Sat.	Sun.
Baker	104/74	103/74	104/73
Barstow	102/69	102/68	102/71
Death Vly.	110/88	108/84	108/87
Lancaster	93/64	94/65	94/63
Victorville	92/58	92/60	92/62

SOUTHERN MTS. & VALLEYS
Sunny today; clouds, then sun Monrovia.

City	Today	Sat.	Sun.
Big Bear	77/47	77/42	75/43
Idyllwild	83/59	85/61	86/59
L. Arrowh'd	78/54	79/53	78/53
Monrovia	82/66	83/66	83/65
Riverside	90/57	90/58	90/58

SOUTH COAST
Low clouds giving way to sunshine today.

City	Today	Sat.	Sun.
Long Beach	82/69	82/70	81/69
Oceanside	79/63	79/64	80/63
San Diego	79/72	79/72	79/72
Santa Mon.	77/67	76/67	76/66
Ventura	74/63	75/62	73/61

SOUTHERN DESERT
Mostly sunny and very warm today. A moonlit sky tonight.

City	Today	Sat.	Sun.
29 Palms	102/73	101/72	101/72
Blythe	106/81	104/80	106/76
El Centro	107/78	106/76	106/76
Needles	109/87	108/87	108/82
Palm Spgs	106/78	106/77	106/75

COAST
Today: High: 77° Low: 70°

Low clouds, then sun.
Saturday: H: 77° L: 70°
Clouds breaking.
Sunday: H: 76° L: 70°
Clouds breaking for sun.
Monday: H: 74° L: 66°
Clouds breaking.
Tuesday: H: 76° L: 70°
Low clouds, then sun.

INLAND
Today: High: 90° Low: 57°

Plenty of sunshine.
Saturday: H: 90° L: 58°
Plenty of sunshine.
Sunday: H: 90° L: 58°
Brilliant sunshine.
Monday: H: 90° L: 64°
Abundant sunshine.
Tuesday: H: 90° L: 60°
Sunshine.

MOUNTAINS
Today: High: 77° Low: 47°

Sunny and beautiful.
Saturday: H: 77° L: 42°
Sunshine and pleasant.
Sunday: H: 75° L: 43°
Nice with sunshine.
Monday: H: 76° L: 42°
Pleasant with sunshine.
Tuesday: H: 74° L: 43°
Sunny.

LOW DESERT
Today: High: 106° Low: 78

Mostly sunny and warm.
Saturday: H: 106° L: 77
Mostly sunny and warm.
Sunday: H: 106° L: 75
Sunny and very warm.
Monday: H: 105° L: 76
Mostly sunny.
Tuesday: H: 105° L: 76
Mostly sunny.

Temperatures are today's highs and tonight's lows.

Map readings
Lake Arrowhead 78/54
Pasadena 86/60
Big Bear Lake 77/47
Las Vegas 102/80
San Bernardino 91/62
Laughlin 107/84
Los Angeles 83/68
Redlands 91/58
Needles 109/87
Ontario 90/56
Fontana 90/61
Colton 92/61
Yucaipa 87/56
LA Int'l Airport 77/68
Riverside 90/57
Moreno Valley 91/56
Banning 91/61
Tram 70/58
Palm Springs 106/78
Anaheim 85/68
Indio 107/
Long Beach 82/69
Corona 91/64
Perris 90/59
Rancho Mirage 107/78
Santa Ana 80/69
Hemet 93/59
Idyllwild 83/59
La Quinta 106/77
Newport Beach 77/70
Lake Elsinore 90/60
Murrieta 88/58
Blythe 106/81
Temecula 87/57
Oceanside 79/63
Escondido 84/61
San Diego 79/72

Air Quality Forecast
Pollution standard index measures air quality by particles in the air

NOT AVAILABLE		
GOOD	0-50 PSI
MODERATE	51-100 PS
UNHEALTHY FOR SENSITIVE GROUPS	101-150
UNHEALTHY	151-200
VERY UNHEALTHY	201-300
HAZARDOUS	301-500

Sources: South Coast Air Quality Management District, San Diego County Air Pollution Control District, Clark County NV Department of Air Quality

INLAND TODAY
Plenty of sunshine, but low clouds followed by sunshine near Temecula. Winds northwest 4–8 mph.

UV INDEX TODAY
COAST **8** Very High
INLAND **9** Very High
MOUNTAINS Very High
LOW DESERT Very High

The higher the AccuWeather.com UV Index™ number, the greater the need for eye and skin protection.

SURF REPORT TODAY

	Waves	Wind speed	Direction	Water temp.
Los Angeles	1-3 ft.	4-8 kts.	SW	72
Orange County	4-7 ft.	4-8 kts.	WNW	72
San Diego	2-4 ft.	6-12 kts.	W	76

TIDE REPORT

	Today		Saturday	
	Highs	Lows	Highs	Lows
Los Angeles	9:41 a.m.	3:19 a.m.	10:03 a.m.	3:45 a.m.
Outer Harbor	8:52 p.m.	2:46 p.m.	9:23 p.m.	3:17 p.m.
Newport Bch.	9:32 a.m.	3:19 a.m.	9:54 a.m.	3:45 a.m.
Balboa Pier	8:43 p.m.	2:46 p.m.	9:14 p.m.	3:17 p.m.
San Diego	9:30 a.m.	3:11 a.m.	9:53 a.m.	3:38 a.m.
Broadway	8:51 p.m.	2:44 p.m.	9:22 p.m.	3:15 p.m.

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ALMANAC

Statistics for Thu. Season begins Oct. 1	Temperatures HI/Lo	Normal HI/Lo	24 hrs. through 4 p.m.	Precipitation Season to date	Norm seas tota
Beaumont	90/61	97/60	0.00	7.23	19.3
Big Bear Lake	77/50	79/47	0.00	9.45	20.1
Blythe	104/84	107/79	0.00	0.97	3.9
Corona	91/59	95/60	0.00	2.10	13.3
Fontana	91/65	93/60	0.00	5.82	9
Hemet	94/64	98/60	0.00	7.18	11
Highland	91/63	98/63	0.00	9.74	13.9
Idyllwild	85/55	85/54	0.00	8.37	26.1
Lake Arrowhead	84/64	81/57	0.00	13.91	39.0
Lake Elsinore	100/65	99/62	0.00	3.78	12.4
Menifee	91/66	99/59	0.00	3.62	11.1
Moreno Valley	92/62	96/63	0.00	4.50	9.4
Murrieta	89/62	95/61	0.00	4.29	11.6
Ontario	93/66	94/65	0.00	2.46	15.0
Palm Springs	109/81	106/77	0.00	2.80	5.8
P.S. Tram	74/55	84/54	0.00	9.35	11.7
Redlands	94/65	96/62	0.00	3.98	13.2
Rialto	92/65	98/63	0.00	6.51	13.9
Riverside	92/61	95/62	0.00	2.53	10.3
San Bernardino	95/68	97/64	0.00	6.33	16.0
Temecula	89/62	82/63	0.00	5.89	11.7
Thermal	109/79	105/73	0.00	0.53	3.2
Yucaipa	86/63	92/60	0.00	7.65	9

CALIFORNIA

Hottest Spot
Death Valley   117
Coldest Spot
Boca Reservoir   40
STATE EXTREMES FOR THURSDAY

NORTHWEST
Low clouds followed by sunshine today; hazy sun and hot toward Ukiah.

City	Today	Sat.	Sun.
Crscnt. City	65/53	64/52	63/54
Eureka	66/52	65/52	63/53
Ft. Bragg	72/54	77/54	74/53
Trinidad	64/52	62/52	62/53
Ukiah	99/55	101/54	100/53

SIERRA NEVADA
Plenty of sunshine today; smoky toward Greenville with hazy sun.

City	Today	Sat.	Sun.
Bishop	99/60	100/58	102/61
Greenville	92/61	95/61	94/62
Mammoth	85/43	86/44	86/45
Tahoe Vly.	82/39	84/42	85/45
Yosemite	89/58	90/58	91/62

CENTRAL VALLEY
Hazy sun today. Hot; smoky. Hazy tonight.

City	Today	Sat.	Sun.
Bakersfield	101/74	102/72	103/73
Fresno	102/71	103/69	103/70
Merced	98/63	100/61	100/62
Modesto	97/63	100/62	99/62
Sacto	94/57	98/57	96/58

BAY AREA
Low clouds followed by sunshine today.

City	Today	Sat.	Sun.
Napa	86/52	90/54	87/54
Oakland	73/53	75/54	72/55
San Fran.	71/54	74/54	72/54
San Jose	85/59	87/59	86/58
Santa Cruz	74/54	73/54	70/55

CENTRAL COAST
Low clouds giving way to sunshine today; humid toward Santa Barbara.

City	Today	Sat.	Sun.
Lompoc	74/55	73/54	68/55
Monterey	68/53	69/52	67/53
Pismo Bch.	75/56	75/54	74/55
S. L. Obispo	83/57	82/55	80/54
Santa Barb.	78/64	78/62	77/61

NORTHERN DESERT
Brilliant sunshine today. Clear tonight. Plenty of sun tomorrow.

City	Today	Sat.	Sun.
Baker	105/82	108/80	111/82
Barstow	103/79	106/78	108/78
Death Vly.	114/95	114/90	115/92
Lancaster	100/72	101/72	103/72
Victorville	95/67	97/66	98/69

SOUTHERN MTS. & VALLEYS
Mostly sunny today. Clear tonight. Plenty of sunshine tomorrow.

City	Today	Sat.	Sun.
Big Bear	76/48	78/48	80/50
Idyllwild	86/66	89/68	92/67
L. Arrowh'd	81/61	82/59	84/60
Monrovia	87/68	88/68	89/66
Riverside	95/67	94/65	95/66

SOUTH COAST
Low clouds giving way to sunshine today; humid toward San Diego.

City	Today	Sat.	Sun.
Long Beach	86/71	85/69	86/69
Oceanside	83/70	82/68	82/67
San Diego	82/74	82/72	82/72
Santa Mon.	81/70	79/68	80/67
Ventura	78/66	77/63	76/63

SOUTHERN DESERT
Sunny to partly cloudy today; very warm toward Needles. Clear tonight.

City	Today	Sat.	Sun.
29 Palms	101/80	105/81	107/81
Blythe	104/85	108/86	112/88
El Centro	105/86	108/86	110/84
Needles	108/90	112/90	115/92
Palm Spgs.	105/85	109/85	111/85

COAST
Today: High: 80° Low: 71°

Clouds breaking for sun.

Saturday: H: 80° L: 70°
Partly cloudy.

Sunday: H: 80° L: 70°
Partly cloudy.

Monday: H: 80° L: 70°
Partly cloudy.

Tuesday: H: 82° L: 71°
Partly cloudy.

INLAND
Today: High: 95° Low: 67°

Mostly sunny.

Saturday: H: 94° L: 65°
Plenty of sunshine.

Sunday: H: 95° L: 66°
Mostly sunny.

Monday: H: 97° L: 66°
Mostly sunny and warm.

Tuesday: H: 97° L: 69°
Partly sunny; seasonable.

MOUNTAINS
Today: High: 76° Low: 48°
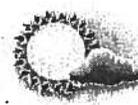
Sunny to partly cloudy.

Saturday: H: 78° L: 48°
Sunny and delightful.

Sunday: H: 80° L: 50°
Mostly sunny.

Monday: H: 80° L: 49°
Pleasant with sunshine.

Tuesday: H: 79° L: 49°
A stray p.m. t-storm.

LOW DESER
Today: High: 105° Low:

Sunny to partly cloud

Saturday: H: 109° L:
Sunny and very warm

Sunday: H: 111° L:
Mostly sunny and ho

Monday: H: 109° L:
Mostly sunny and war

Tuesday: H: 104° L:
Partly sunny and warm
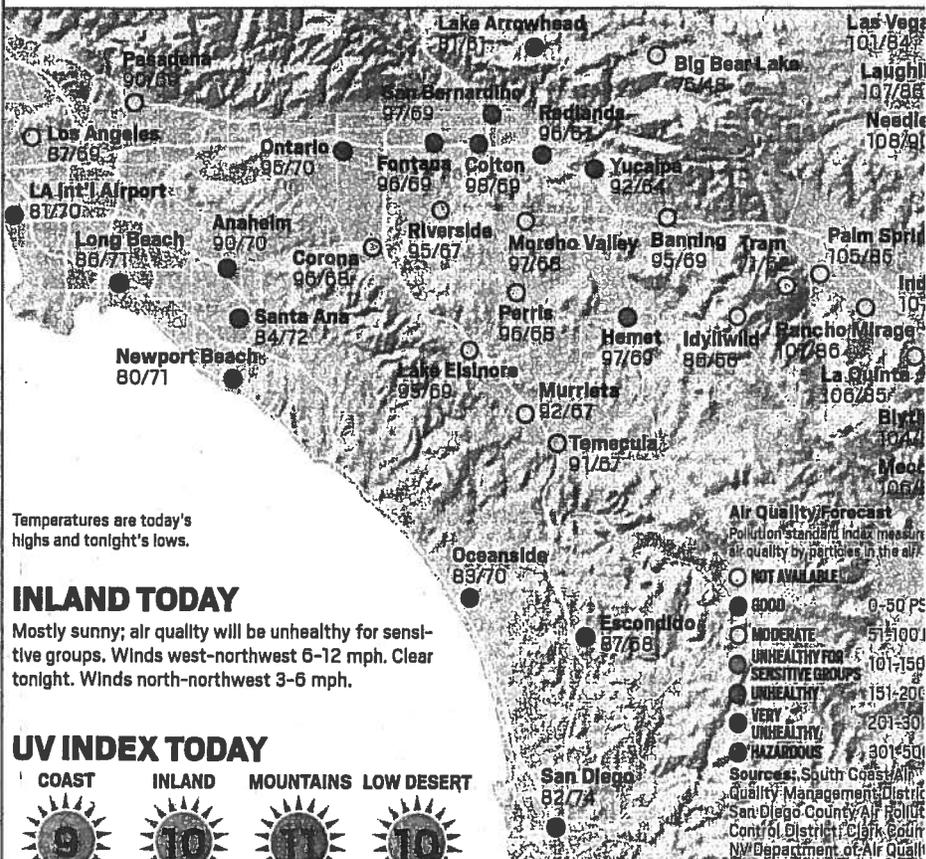
Temperatures are today's highs and tonight's lows.

INLAND TODAY
Mostly sunny; air quality will be unhealthy for sensitive groups. Winds west-northwest 6-12 mph. Clear tonight. Winds north-northwest 3-6 mph.

UV INDEX TODAY
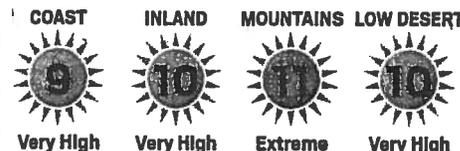
COAST	INLAND	MOUNTAINS	LOW DESERT
9	10	11	10
Very High	Very High	Extreme	Very High

The higher the AccuWeather.com UV Index™ number, the greater the need for eye and skin protection.

SURF REPORT TODAY

	Waves	Wind speed	Direction	Water temp.
Los Angeles	1-3 ft.	4-8 kts.	SW	73
Orange County	4-7 ft.	3-6 kts.	W	72
San Diego	2-4 ft.	4-8 kts.	W	75

TIDE REPORT

	Today Highs	Today Lows	Saturday Highs	Saturday Lows
Los Angeles	2:37 a.m.	8:22 a.m.	4:24 a.m.	9:25 a.m.
Outer Harbor	3:11 p.m.	10:19 p.m.	4:17 p.m.	11:47 p.m.
Newport Bch.	2:28 a.m.	8:22 a.m.	4:15 a.m.	9:25 a.m.
Balboa Pier	3:02 p.m.	10:19 p.m.	4:08 p.m.	11:47 p.m.
San Diego	2:30 a.m.	8:20 a.m.	4:11 a.m.	9:23 a.m.
Broadway	3:05 p.m.	10:09 p.m.	4:12 p.m.	11:41 p.m.

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Map city temperatures (highs/lows)

Lake Arrowhead 87/81 · Pasadena 90/69 · Big Bear Lake 76/48 · Las Vegas 101/84 · Laughlin 107/86 · San Bernardino 97/69 · Redlands 96/62 · Needles 108/91 · Los Angeles 87/69 · Ontario 95/70 · Fontana 96/69 · Colton 96/69 · Yucaipa 92/64 · LA Int'l Airport 81/70 · Anaheim 90/70 · Riverside 95/67 · Moreno Valley 97/68 · Banning 95/69 · Tram 71/52 · Palm Spring 105/85 · Long Beach 86/71 · Corona 96/68 · Ind 107 · Santa Ana 84/72 · Perris 96/68 · Hemet 97/69 · Idyllwild 86/66 · Rancho Mirage 107/86 · Newport Beach 80/71 · Lake Elsinore 95/69 · Murrieta 92/67 · La Quinta 106/85 · Temecula 91/67 · Blyth 104 · Oceanside 83/70 · Mec 106 · Escondido 87/68 · San Diego 82/74

Air Quality Forecast
Pollution standard index measures air quality by particles in the air.

NOT AVAILABLE	
GOOD	0-50 PS
MODERATE	51-100
UNHEALTHY FOR SENSITIVE GROUPS	101-150
UNHEALTHY	151-200
VERY UNHEALTHY	201-300
HAZARDOUS	301-500

Sources: South Coast Air Quality Management District, San Diego County Air Pollution Control District, Clark County NV Department of Air Quality

ALMANAC

Statistics for Thu. Season begins Oct. 1	Temperatures HI/Lo	Normal HI/Lo	24 hrs. through 4 p.m.	Precipitation Season to date	Nor sea to
Beaumont	92/66	97/61	0.11	7.23	19
Big Bear Lake	75/54	80/48	0.00	9.31	20
Blythe	102/79	107/80	Trace	0.97	3
Corona	90/65	94/60	0.00	2.05	13
Fontana	92/70	93/61	0.00	5.82	9
Hemet	95/67	98/60	0.00	7.18	1
Highland	95/68	98/64	0.00	9.74	13
Idyllwild	82/59	86/55	0.01	7.84	26
Lake Arrowhead	86/63	81/57	0.00	13.91	39
Lake Elsinore	102/70	99/63	0.00	3.78	12
Menifee	92/68	100/59	0.02	3.62	11
Moreno Valley	97/68	96/63	0.00	4.50	9
Murrieta	88/66	96/61	0.00	4.29	11
Ontario	93/69	94/65	0.00	2.46	15
Palm Springs	102/85	106/78	0.00	2.80	5
P.S. Tram	66/55	85/54	0.08	8.90	1
Redlands	97/68	96/62	0.00	3.98	13
Rialto	94/69	98/64	0.00	6.51	13
Riverside	94/67	95/62	0.00	2.53	10
San Bernardino	99/71	98/64	0.00	6.33	16
Temecula	89/67	82/63	0.00	5.89	11
Thermal	107/85	106/74	0.00	0.53	3
Yucaipa	89/66	92/60	0.00	7.65	9

CALIFORNIA

Hottest Spot
Death Valley 116

Coldest Spot
Bodie State Park 34

STATE EXTREMES FOR FRIDAY

NORTHWEST
Low clouds followed by sunshine today; hot toward Ukiah with hazy sun.

City	Today	Sun.	Mon.
Crscnt City	64/53	62/52	69/55
Eureka	66/53	64/53	64/53
Ft. Bragg	72/54	75/52	72/52
Trinidad	62/53	62/53	61/54
Ukiah	102/56	101/51	96/54

SIERRA NEVADA
Plenty of sunshine today, but hazy sun toward Greenville.

City	Today	Sun.	Mon.
Bishop	101/60	102/59	101/61
Greenville	94/62	94/60	92/58
Mammoth	87/45	87/44	85/42
Tahoe Vly.	84/42	85/42	82/44
Yosemite	90/61	89/57	89/56

CENTRAL VALLEY
Hot today. Plenty of sunshine near Bakersfield; hazy sun elsewhere.

City	Today	Sun.	Mon.
Bakersfield	103/72	103/73	105/72
Fresno	104/71	103/69	104/68
Merced	101/62	100/59	100/60
Modesto	100/64	99/63	96/60
Sacto	98/57	95/57	89/56

BAY AREA
Low clouds followed by sunshine today, except hazy sun toward Napa.

City	Today	Sun.	Mon.
Napa	88/53	86/54	81/53
Oakland	75/54	72/55	68/56
San Fran.	74/54	72/55	67/55
San Jose	88/60	86/60	80/59
Santa Cruz	74/53	72/54	68/55

CENTRAL COAST
Areas of low clouds, then sun today; humid toward Santa Barbara.

City	Today	Sun.	Mon.
Lompoc	72/54	71/54	69/54
Monterey	69/53	66/53	63/54
Pismo Bch	74/54	74/54	72/55
S.L. Obispo	82/55	80/54	79/53
Santa Barb.	77/63	76/63	77/60

NORTHERN DESERT
Abundant sunshine today; very warm toward Baker. Clear tonight.

City	Today	Sun.	Mon.
Baker	109/81	110/82	111/81
Barstow	107/79	109/79	107/77
Death Vly.	116/97	117/91	116/95
Lancaster	102/70	104/70	101/70
Victorville	97/65	98/68	97/67

SOUTHERN MTS. & VALLEYS
Plenty of sunshine today. Mainly clear tonight. Mostly sunny tomorrow.

City	Today	Sun.	Mon.
Big Bear	78/50	82/51	80/50
Idyllwild	88/68	92/70	92/66
L. Arrowh'd	82/61	84/61	84/61
Monrovia	87/69	88/68	89/68
Riverside	94/66	95/67	97/66

SOUTH COAST
Areas of low clouds early today; otherwise, mostly sunny.

City	Today	Sun.	Mon.
Long Beach	85/70	85/70	86/70
Oceanside	82/70	82/67	82/66
San Diego	83/73	82/72	82/72
Santa Mon.	79/68	78/67	80/67
Ventura	77/63	76/63	77/64

SOUTHERN DESERT
Very warm today with plenty of sun. Mainly clear tonight.

City	Today	Sun.	Mon.
29 Palms	105/82	107/82	106/81
Blythe	108/86	112/88	111/86
El Centro	109/86	111/85	110/85
Needles	111/89	115/90	114/90
Palm Spgs.	110/85	111/84	109/85

COAST
Today: High: 80° Low: 70°

Partly cloudy.

Sunday:	H: 80°	L: 71°
Partly cloudy.
Monday:	H: 80°	L: 71°
Partly cloudy.
Tuesday:	H: 83°	L: 71°
Partly cloudy.
Wednesday:	H: 82°	L: 70°
Partly cloudy.

INLAND
Today: High: 94° Low: 66°

Plenty of sunshine.

Sunday:	H: 96°	L: 67°
Mostly sunny.
Monday:	H: 97°	L: 66°
Mostly sunny and warm.
Tuesday:	H: 97°	L: 67°
Partly sunny; seasonable.
Wednesday:	H: 98°	L: 68°
Sunny and warm.

MOUNTAINS
Today: High: 78° Low: 50°

Sunny and pleasant.

Sunday:	H: 82°	L: 51°
Mostly sunny.
Monday:	H: 80°	L: 50°
Pleasant with sunshine.
Tuesday:	H: 79°	L: 50°
A thunderstorm around.
Wednesday:	H: 78°	L: 49°
A thunderstorm around.

LOW DESERT
Today: High: 110° Low:

Sunny and very warm.

Sunday:	H: 111°	L:
Mostly sunny and ho
Monday:	H: 109°	L:
Mostly sunny and war
Tuesday:	H: 107°	L:
Partly sunny and warm
| **Wednesday:** | H: 105° | L: |
Very warm with sunshi

Temperatures are today's highs and tonight's lows.
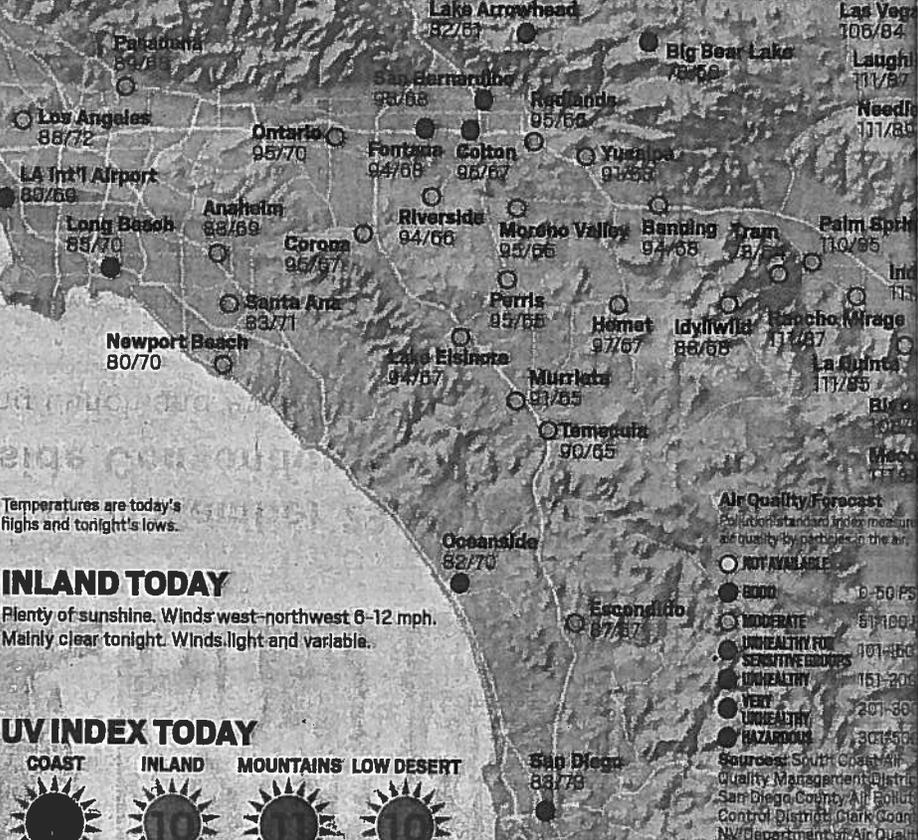
INLAND TODAY
Plenty of sunshine. Winds west-northwest 6-12 mph. Mainly clear tonight. Winds light and variable.

UV INDEX TODAY

COAST	INLAND	MOUNTAINS	LOW DESERT
Very High	Very High	Extreme	Very High

The higher the AccuWeather.com UV Index™ number, the greater the need for eye and skin protection.

SURF REPORT TODAY

	Waves	Wind speed	Direction	Water temp.
Los Angeles	1-3 ft.	4-8 kts.	SW	73
Orange County	3-6 ft.	3-6 kts.	WSW	72
San Diego	2-4 ft.	6-12 kts.	WNW	75

TIDE REPORT

	Today Highs	Today Lows	Sunday Highs	Sunday Lows
Los Angeles	4:24 a.m.	9:25 a.m.	6:20 a.m.	10:46 a.m.
Outer Harbor	4:17 p.m.	11:47 p.m.	5:24 p.m.	—
Newport Bch.	4:15 a.m.	9:25 a.m.	6:11 a.m.	10:46 a.m.
Balboa Pier	4:08 p.m.	11:47 p.m.	5:15 p.m.	—
San Diego	4:11 a.m.	9:23 a.m.	6:12 a.m.	10:42 a.m.
Broadway	4:12 p.m.	11:41 p.m.	5:19 p.m.	—

Online PE.com/weather/

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Map locations

Lake Arrowhead 82/61
Big Bear Lake 78/50
Las Vegas 106/84
Laughli 111/87
Needle 101/89
Pasadena 86/68
San Bernardino 99/68
Redlands 95/66
Los Angeles 86/72
Ontario 95/70
Fontana 94/68
Colton 96/67
Yucaipa 91/66
LA Int'l Airport 80/69
Anaheim 88/69
Riverside 94/66
Moreno Valley 95/66
Banning 94/68
Tram 78/75
Palm Spri 110/85
Long Beach 85/70
Corona 95/67
Santa Ana 83/71
Perris 95/66
Hemet 97/67
Idyllwild 88/68
Rancho Mirage 111/87
Newport Beach 80/70
Lake Elsinore 94/67
Murrieta 91/65
La Quinta 111/85
Temecula 90/65
Oceanside 82/70
Escondido 87/67
San Diego 83/73

Air Quality Forecast
Pollution standard index measures air quality by particles in the air.

NOT AVAILABLE	
GOOD	0-50 PS
MODERATE	51-100
UNHEALTHY FOR SENSITIVE GROUPS	101-150
UNHEALTHY	151-200
VERY UNHEALTHY	201-300
HAZARDOUS	301-500

Sources: South Coast Air Quality Management District, San Diego County Air Pollution Control District, Clark County NV Department of Air Quality

ALMANAC

Statistics for Fri. Season begins Oct. 1	Temperatures HI/Lo	Normal HI/Lo	Precipitation 24 hrs. through 4 p.m.	Season to date	Normal season total
Beaumont	95/65	97/61	0.00	7.23	19.
Big Bear Lake	75/52	80/47	0.13	9.44	20.
Blythe	106/84	107/80	0.00	0.97	3.
Corona	91/66	94/60	0.00	2.05	13.
Fontana	95/69	93/61	0.00	5.82	9.
Hemet	97/68	98/60	0.00	7.18	11.
Highland	97/68	98/64	0.00	9.74	13.
Idyllwild	79/57	86/54	0.00	7.84	26.
Lake Arrowhead	86/61	81/57	0.00	13.91	39.
Lake Elsinore	103/70	99/63	0.00	3.78	12.4
Menifee	93/66	100/59	0.00	3.62	11.
Moreno Valley	99/69	96/63	0.00	4.50	9.
Murrieta	92/67	96/61	0.00	4.29	11.
Ontario	95/69	94/65	0.00	2.46	15.0
Palm Springs	103/85	106/78	0.00	2.80	5.8
P.S. Tram	66/54	85/54	0.45	9.35	11.
Redlands	98/69	96/62	0.00	8.98	13.2
Rialto	96/69	98/64	0.00	6.51	13.9
Riverside	96/67	95/62	0.00	2.53	10.3
San Bernardino	99/71	98/64	0.00	6.33	16.0
Temecula	92/67	82/63	0.00	5.89	11.7
Thermal	109/81	106/74	0.00	0.53	3.2
Yucaipa	90/65	92/60	0.00	7.65	9.4

CALIFORNIA

Hottest Spot
Death Valley 119

Coldest Spot
Bodie State Park ... 32

STATE EXTREMES FOR SATURDAY

NORTHWEST
Partly sunny today, but hazy toward Ukiah.

City	Today	Mon.	Tue.
Crscnt. City	62/53	63/54	62/55
Eureka	63/54	64/52	65/54
Ft. Bragg	71/53	73/52	71/55
Trinidad	62/53	62/53	62/55
Ukiah	101/53	97/52	92/53

SIERRA NEVADA
Plenty of sunshine near Tahoe Valley today; hazy sun elsewhere.

City	Today	Mon.	Tue.
Bishop	103/60	102/58	98/59
Greenville	95/62	92/60	87/57
Mammoth	88/44	86/42	83/41
Tahoe Vly.	85/44	83/45	81/45
Yosemite	90/61	87/58	85/55

CENTRAL VALLEY
Hazy sun and hot today; smoky. Hazy tonight.

City	Today	Mon.	Tue.
Bakersfield	103/76	104/72	100/68
Fresno	103/70	102/67	98/65
Merced	100/62	99/59	94/58
Modesto	100/63	97/59	92/59
Sacto	96/58	90/57	85/57

BAY AREA
Partly sunny today; however, sunny toward Napa.

City	Today	Mon.	Tue.
Napa	86/54	80/54	77/56
Oakland	73/55	68/58	69/57
San Fran.	71/55	68/57	70/57
San Jose	86/58	81/58	78/59
Santa Cruz	72/54	68/56	67/57

CENTRAL COAST
Areas of low clouds, then sun today; pleasant toward Santa Barbara.

City	Today	Mon.	Tue.
Lompoc	72/53	70/54	68/55
Monterey	68/53	65/55	67/55
Pismo Bch.	75/54	71/55	72/55
S. L. Obispo	83/54	78/55	78/54
Santa Barb.	78/62	77/61	76/60

NORTHERN DESERT
Plenty of sunshine today; hot near Barstow and toward Baker.

City	Today	Mon.	Tue.
Baker	112/83	110/81	107/79
Barstow	109/79	107/75	103/76
Death Vly.	118/96	117/91	112/92
Lancaster	105/71	100/71	98/68
Victorville	100/68	98/68	96/67

SOUTHERN MTS. & VALLEYS
Mostly sunny today; very warm toward Idyllwild. Mainly clear tonight.

City	Today	Mon.	Tue.
Big Bear	80/48	79/47	78/47
Idyllwild	91/68	90/68	90/64
L. Arrow'd	86/63	84/60	83/58
Monrovia	89/69	88/68	89/65
Riverside	96/68	97/65	96/65

SOUTH COAST
Areas of low clouds early today; otherwise, mostly sunny.

City	Today	Mon.	Tue.
Long Beach	85/70	85/69	86/69
Oceanside	81/69	82/68	82/67
San Diego	81/72	81/71	82/72
Santa Mon.	79/68	79/67	80/66
Ventura	76/63	76/63	76/63

SOUTHERN DESERT
Mostly sunny and hot today. Clear to partly cloudy tonight.

City	Today	Mon.	Tue.
29 Palms	108/83	106/80	104/79
Blythe	112/89	110/88	107/84
El Centro	112/83	111/84	108/84
Needles	116/93	115/91	110/89
Palm Spgs.	113/87	110/85	108/84

COAST
Today: High: 79° Low: 70°

Partly cloudy.

Monday: H: 80° L: 70°
Partly cloudy.

Tuesday: H: 80° L: 70°
Partly cloudy.

Wednesday: H: 80° L: 69°
Partly cloudy.

Thursday: H: 79° L: 70°
Partly cloudy.

INLAND
Today: High: 96° Low: 68°

Mostly sunny.

Monday: H: 97° L: 65°
Mostly sunny and warm.

Tuesday: H: 96° L: 65°
Partly sunny; seasonable.

Wednesday: H: 96° L: 64°
Sunny and remaining warm.

Thursday: H: 95° L: 61°
Sunshine.

MOUNTAINS
Today: High: 80° Low: 48°

Mostly sunny.

Monday: H: 79° L: 47°
Pleasant with sunshine.

Tuesday: H: 78° L: 47°
A thunderstorm around.

Wednesday: H: 76° L: 46°
A thunderstorm around.

Thursday: H: 76° L: 45°
Sunny to partly cloudy.

LOW DESE[RT]
Today: High: 113° Low[ ]

Mostly sunny and h[ ]

Monday: H: 110° L[ ]
Mostly sunny and wa[ ]

Tuesday: H: 108° L[ ]
Partly sunny and war[ ]

Wednesday: H: 105° L[ ]
Sunny to partly clou[ ]

Thursday: H: 107° L[ ]
Mostly sunny and wa[ ]

Temperatures are today's highs and tonight's lows.

Map stations
Lake Arrowhead 86/63
Pasadena 91/69
Big Bear Lake 80/48
San Bernardino 99/69
Redlands 98/67
Las Veg[as] 109/86
Laughl[in] 115/90
Los Angeles 86/68
Ontario 96/70
Fontana 97/69
Colton 99/68
Yucaipa 94/65
Needl[es] 116/93
LA Int'l Airport 79/69
Anaheim 89/69
Riverside 96/68
Moreno Valley 98/68
Banning 98/70
Tram 75/54
Palm Spri[ngs] 113/87
Long Beach 85/70
Corona 97/67
Ind[io] 114
Santa Ana 83/71
Perris 98/68
Hemet 100/69
Idyllwild 91/68
Rancho Mirage 114/88
La Quinta 114/86
Newport Beach 79/70
Lake Elsinore 97/68
Murrieta 93/66
Blyth[e] 112/8
Temecula 93/65
Mecc[a] 113/9
Oceanside 81/69
Escondido 88/67
San Diego 81/72

INLAND TODAY
Mostly sunny. Winds northwest 6-12 mph. Mainly clear tonight. Winds light and variable.

UV INDEX TODAY

	COAST	INLAND	MOUNTAINS	LOW DESERT
Index	10	10	11	10
	Very High	Very High	Extreme	Very High

The higher the AccuWeather.com UV Index™ number, the greater the need for eye and skin protection.

SURF REPORT TODAY

	Waves	Wind speed	Direction	Water temp.
Los Angeles	1-3 ft.	4-8 kts.	SW	72
Orange County	4-7 ft.	4-8 kts.	WNW	72
San Diego	2-4 ft.	4-8 kts.	W	75

TIDE REPORT

	Today Highs	Today Lows	Monday Highs	Monday Lows
Los Angeles Outer Harbor	6:20 a.m. 5:24 p.m.	10:46 a.m. —	7:35 a.m. 6:20 p.m.	12:52 a.m. 12:03 p.m.
Newport Bch. Balboa Pier	6:11 a.m. 5:15 p.m.	10:46 a.m. —	7:26 a.m. 6:11 p.m.	12:52 a.m. 12:03 p.m.
San Diego Broadway	6:12 a.m. 5:19 p.m.	10:42 a.m. —	7:29 a.m. 6:17 p.m.	12:49 a.m. 11:57 p.m.

Online PE.com/weather/

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Air Quality Forecast
Pollution standard index measure[s] air quality by particles in the air.

○	NOT AVAILABLE	
●	GOOD	0-50 PSI
○	MODERATE	51-100 P[SI]
●	UNHEALTHY FOR SENSITIVE GROUPS	101-150 [ ]
●	UNHEALTHY	151-200
●	VERY UNHEALTHY	201-300
●	HAZARDOUS	301-500

Sources: South Coast Air Quality Management District; San Diego County Air Pollutio[n] Control District; Clark County NV Department of Air Quality

ALMANAC

Statistics for Sat. Season begins Oct. 1	Temperatures HI/Lo	Normal HI/Lo	Precipitation 24 hrs. through 4 p.m.	Season to date	Norm[al] seas[on] tota[l]
Beaumont	93/67	97/61	0.00	7.23	19.3
Big Bear Lake	81/50	80/47	0.01	9.45	20.1
Blythe	109/89	107/80	0.00	0.97	3.8
Corona	92/65	94/60	0.00	2.05	13.3
Fontana	94/69	93/61	0.00	5.82	9.1
Hemet	97/68	98/60	0.00	7.18	11.7
Highland	95/70	98/64	0.00	9.74	13.9
Idyllwild	85/58	86/54	0.00	8.37	26.1
Lake Arrowhead	90/61	81/57	0.00	13.91	39.6
Lake Elsinore	102/71	99/63	0.00	3.78	12.4
Menifee	92/70	100/59	0.00	3.62	11.7
Moreno Valley	96/69	96/63	0.00	4.50	9.4
Murrieta	89/67	96/61	0.00	4.29	11.6
Ontario	94/69	94/65	0.00	2.46	15.0
Palm Springs	112/85	106/78	0.00	2.80	5.8
P.S. Tram	75/58	85/54	0.00	9.35	11.7
Redlands	95/70	96/62	0.00	3.98	13.2
Rialto	96/68	98/64	0.00	6.51	13.9
Riverside	94/67	95/62	0.00	2.53	10.3
San Bernardino	97/71	98/64	0.00	6.33	16.0
Temecula	91/68	82/63	0.00	5.89	11.7
Thermal	113/87	106/74	0.00	0.53	3.2
Yucaipa	91/66	92/60	0.00	7.65	9.42

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CALIFORNIA

Hottest Spot
Death Valley — 112
Coldest Spot
Boca Reservoir — 33
STATE EXTREMES FOR MONDAY

NORTHWEST
Clouds, then sun today; however, mostly sunny toward Ukiah.

City	Today	Wed.	Thu.
Crscnt. City	63/51	60/50	59/52
Eureka	63/52	63/51	63/51
Ft. Bragg	71/53	72/52	71/54
Trinidad	61/51	60/51	61/51
Ukiah	97/53	94/52	93/54

SIERRA NEVADA
Sunny to partly cloudy today; a thunderstorm in spots.

City	Today	Wed.	Thu.
Bishop	92/53	91/54	94/57
Greenville	92/62	91/62	89/59
Mammoth	79/41	77/42	80/43
Tahoe Vly.	81/42	80/43	78/41
Yosemite	84/58	84/58	84/53

CENTRAL VALLEY
Plenty of sunshine today; hot. Clear tonight.

City	Today	Wed.	Thu.
Bakersfield	99/73	100/72	100/71
Fresno	100/70	101/69	101/68
Merced	97/63	97/62	97/62
Modesto	96/64	96/62	94/63
Sacto	92/58	90/57	91/58

BAY AREA
Low clouds giving way to sunshine today.

City	Today	Wed.	Thu.
Napa	84/54	82/52	85/53
Oakland	72/56	72/56	72/56
San Fran.	72/56	72/55	71/56
San Jose	82/59	81/59	81/59
Santa Cruz	71/56	70/57	73/55

CENTRAL COAST
Low clouds followed by sunshine today.

City	Today	Wed.	Thu.
Lompoc	72/55	73/55	70/58
Monterey	69/56	69/57	69/55
Pismo Bch.	73/56	73/56	74/56
S. L. Obispo	79/57	78/56	81/58
Santa Barb.	74/60	75/60	75/62

NORTHERN DESERT
Sunny today; a thunderstorm in spots toward Death Valley.

City	Today	Wed.	Thu.
Baker	101/75	101/74	104/77
Barstow	100/70	101/72	102/74
Death Vly.	109/88	108/83	107/89
Lancaster	98/66	97/65	99/69
Victorville	93/60	93/60	95/64

SOUTHERN MTS. & VALLEYS
Clouds, then sun today; however, sunny toward Idyllwild.

City	Today	Wed.	Thu.
Big Bear	73/39	75/39	76/43
Idyllwild	85/62	86/64	90/66
L. Arrowh'd	78/55	78/54	81/57
Monrovia	82/64	82/64	86/67
Riverside	89/59	89/60	91/64

SOUTH COAST
Low clouds giving way to sunshine today.

City	Today	Wed.	Thu.
Long Beach	80/66	80/66	81/68
Oceanside	78/66	79/66	79/65
San Diego	78/68	77/69	79/70
Santa Mon.	78/66	77/65	77/64
Ventura	74/63	74/62	74/62

SOUTHERN DESERT
Plenty of sunshine today; very warm toward Needles. Clear tonight.

City	Today	Wed.	Thu.
29 Palms	98/74	99/74	100/78
Blythe	103/77	104/77	107/82
El Centro	101/73	103/76	106/78
Needles	104/82	106/84	108/87
Palm Spgs.	103/77	105/77	108/81

COAST
Today: High: 76° Low: 67°

Turning sunny.
Wednesday: H: 76° L: 67°
Low clouds, then sun.
Thursday: H: 77° L: 67°
Clouds, then sun.
Friday: H: 80° L: 70°
Mostly sunny.
Saturday: H: 85° L: 67°
Mostly sunny and warm.

INLAND
Today: High: 89° Low: 59°

Low clouds, then sun.
Wednesday: H: 89° L: 60°
Clouds breaking for sun.
Thursday: H: 91° L: 64°
Plenty of sunshine.
Friday: H: 99° L: 67°
Sunny and hot.
Saturday: H: 102° L: 67°
Sunny and hot.

MOUNTAINS
Today: High: 73° Low: 39°

Nice with plenty of sun.
Wednesday: H: 75° L: 39°
Sunny and pleasant.
Thursday: H: 76° L: 43°
Sunny and nice.
Friday: H: 80° L: 46°
Sunny and pleasant.
Saturday: H: 81° L: 47°
Sunny and warm.

LOW DESERT
Today: High: 103° Low: 77°
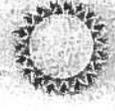
Plenty of sunshine.
Wednesday: H: 105° L: 77°
Sunny and very warm.
Thursday: H: 108° L: 81°
Sunny and very warm.
Friday: H: 111° L: 84°
Hot with plenty of sun.
Saturday: H: 113° L: 83°
Sunshine and very hot.

Temperatures are today's highs and tonight's lows.

Map temperatures
- Lake Arrowhead 78/55
- Pasadena 85/65
- Los Angeles 82/65
- LA Int'l Airport 76/66
- Long Beach 80/66
- Anaheim 84/66
- Santa Ana 78/67
- Newport Beach 76/67
- San Bernardino 92/63
- Redlands 92/61
- Ontario 88/64
- Fontana 91/64
- Colton 93/63
- Yucaipa 89/58
- Riverside 89/59
- Corona 90/63
- Moreno Valley 92/62
- Banning 92/63
- Tram 66/56
- Perris 92/61
- Hemet 93/61
- Idyllwild 85/62
- Lake Elsinore 91/62
- Murrieta 88/62
- Temecula 87/61
- Oceanside 78/66
- Escondido 82/64
- San Diego 78/68
- Big Bear Lake 73/39
- Las Vegas 96/77
- Laughlin 102/80
- Needles 104/82
- Palm Springs 103/77
- Indio 102/
- Rancho Mirage 103/79
- La Quinta 102/75
- Blythe 103/
- Mecca 104/

INLAND TODAY
Low clouds giving way to sunshine. Winds northwest 6-12 mph. Clear to partly cloudy this evening followed by low clouds late. Winds light and variable.
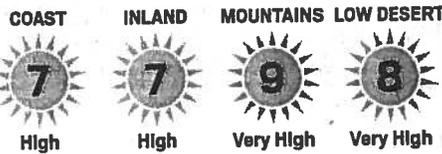
UV INDEX TODAY

COAST	INLAND	MOUNTAINS	LOW DESERT
7	7	9	8
High	High	Very High	Very High

The higher the AccuWeather.com UV Index™ number, the greater the need for eye and skin protection.

SURF REPORT TODAY

	Waves	Wind speed	Direction	Water temp.
Los Angeles	1-3 ft.	4-8 kts.	WSW	68
Orange County	4-8 ft.	3-6 kts.	WSW	69
San Diego	2-4 ft.	4-8 kts.	WNW	72

TIDE REPORT

	Today Highs	Today Lows	Wednesday Highs	Wednesday Lows
Los Angeles	6:41 a.m.	10:56 a.m.	7:31 a.m.	12:50 a.m.
Outer Harbor	5:21 p.m.	—	6:25 p.m.	12:13 p.m.
Newport Bch.	6:32 a.m.	10:56 a.m.	7:22 a.m.	12:50 a.m.
Balboa Pier	5:12 p.m.	—	6:16 p.m.	12:13 p.m.
San Diego	6:27 a.m.	10:56 a.m.	7:22 a.m.	12:44 a.m.
Broadway	5:20 p.m.	—	6:24 p.m.	12:12 p.m.

Online PE.com/weather/

Forecasts and graphics provided by AccuWeather, Inc. ©2018

Air Quality Forecast
Pollution standard index measures air quality by particles in the air.

NOT AVAILABLE	
GOOD	0-50 PSI
MODERATE	51-100 PSI
UNHEALTHY FOR SENSITIVE GROUPS	101-150 PSI
UNHEALTHY	151-200
VERY UNHEALTHY	201-300
HAZARDOUS	301-500

Sources: South Coast Air Quality Management District; San Diego County Air Pollution Control District; Clark County, NV Department of Air Quality

ALMANAC

Statistics for Mon. Season begins Oct. 1	Temperatures HI/Lo	Normal HI/Lo	Precipitation 24 hrs. through 4 p.m.	Season to date	Norm seas tot
Beaumont	91/60	95/59	0.00	7.23	19
Big Bear Lake	76/47	77/45	0.00	9.45	20.
Blythe	101/79	105/77	0.00	0.97	3.
Corona	85/66	94/58	0.00	2.10	13.
Fontana	88/64	92/60	0.00	5.82	9.
Hemet	90/60	97/59	0.00	7.18	11
Highland	84/64	96/62	0.00	9.74	13.
Idyllwild	87/58	84/52	0.00	8.37	26
Lake Arrowhead	85/55	79/55	0.00	13.91	39.
Lake Elsinore	96/67	97/61	0.00	3.78	12.
Menifee	90/65	97/58	0.00	3.62	11
Moreno Valley	91/64	95/62	0.00	4.50	9.
Murrieta	85/61	93/60	0.00	4.29	11
Ontario	87/66	93/65	0.00	2.46	15.
Palm Springs	100/75	104/76	0.00	2.80	5
P.S. Tram	66/52	83/53	0.00	9.35	11
Redlands	90/65	95/61	0.00	3.98	13.
Rialto	90/64	96/62	0.00	6.51	13.
Riverside	89/62	94/61	0.00	2.53	10
San Bernardino	91/67	96/63	0.00	6.33	16
Temecula	84/64	82/62	0.00	5.89	11
Thermal	101/76	105/71	0.00	0.53	3
Yucaipa	84/56	91/59	0.00	7.65	9

CALIFORNIA

Hottest Spot
Death Valley — 113
Coldest Spot
Bodie State Park — 29
STATE EXTREMES FOR SUNDAY

NORTHWEST
Partly sunny today, but hazy toward Ukiah.

City	Today	Tue.	Wed.
Crscnt. City	64/53	63/52	59/53
Eureka	66/51	63/52	65/52
Ft. Bragg	73/54	75/52	70/53
Trinidad	65/51	62/52	62/52
Ukiah	98/55	97/54	92/54

SIERRA NEVADA
Plenty of sunshine today; pleasant. Clear tonight.

City	Today	Tue.	Wed.
Bishop	95/54	93/55	92/56
Greenville	93/63	91/63	90/59
Mammoth	80/42	79/42	77/44
Tahoe Vly.	82/41	81/43	79/43
Yosemite	86/57	85/54	83/52

CENTRAL VALLEY
Mostly sunny today; hot near Bakersfield. Clear tonight.

City	Today	Tue.	Wed.
Bakersfield	99/73	99/72	100/71
Fresno	100/69	100/70	100/68
Merced	97/62	97/63	98/63
Modesto	96/63	96/64	96/63
Sacto	94/59	92/59	90/58

BAY AREA
Low clouds giving way to sunshine today. Partly cloudy tonight.

City	Today	Tue.	Wed.
Napa	86/54	85/54	82/53
Oakland	73/56	73/56	72/57
San Fran.	73/56	73/56	72/57
San Jose	83/60	83/60	82/60
Santa Cruz	71/56	71/57	69/56

CENTRAL COAST
Low clouds followed by sun today; pleasant near San Luis Obispo.

City	Today	Tue.	Wed.
Lompoc	72/55	73/56	73/57
Monterey	70/56	70/57	70/56
Pismo Bch.	72/56	74/57	74/56
S. L. Obispo	78/57	79/58	79/57
Santa Barb.	73/59	75/61	74/61

NORTHERN DESERT
Mostly sunny today. Clear tonight. Plenty of sunshine tomorrow.

City	Today	Tue.	Wed.
Baker	102/74	102/74	103/73
Barstow	99/70	100/70	101/71
Death Vly.	109/86	107/85	106/88
Lancaster	97/66	97/66	95/67
Victorville	93/59	93/60	92/63

SOUTHERN MTS. & VALLEYS
Clouds, then sun today, but mostly sunny toward Idyllwild.

City	Today	Tue.	Wed.
Big Bear	74/38	75/39	74/42
Idyllwild	85/62	87/63	86/63
L. Arrowh'd	78/55	79/54	78/53
Monrovia	82/64	84/62	83/61
Riverside	89/60	91/59	89/61

SOUTH COAST
Low clouds followed by sunshine today.

City	Today	Tue.	Wed.
Long Beach	80/67	80/66	81/67
Oceanside	79/67	79/65	80/65
San Diego	77/68	77/68	80/70
Santa Mon.	77/66	76/65	76/64
Ventura	74/63	74/63	74/63

SOUTHERN DESERT
Mostly sunny today. Clear tonight. Plenty of sunshine tomorrow.

City	Today	Tue.	Wed.
29 Palms	97/73	99/72	99/74
Blythe	101/76	102/77	104/77
El Centro	101/71	101/74	103/75
Needles	104/82	105/80	106/84
Palm Spgs.	102/78	103/76	105/79

COAST
Today: High: 76° Low: 67°

Low clouds breaking.

Tuesday: H: 77° L: 67°
Turning sunny.
Wednesday: H: 77° L: 66°
Low clouds, then sun.
Thursday: H: 77° L: 67°
Mostly sunny.
Friday: H: 79° L: 67°
Mostly sunny.

INLAND
Today: High: 89° Low: 60°

Low clouds, then sun.

Tuesday: H: 91° L: 59°
Low clouds, then sun.
Wednesday: H: 89° L: 61°
Sunny.
Thursday: H: 91° L: 62°
Plenty of sunshine.
Friday: H: 97° L: 66°
Sunny and seasonable.

MOUNTAINS
Today: High: 74° Low: 38°

Mostly sunny; pleasant.

Tuesday: H: 75° L: 39°
Nice with plenty of sun.
Wednesday: H: 74° L: 42°
Sunny and pleasant.
Thursday: H: 75° L: 43°
Sunny and nice.
Friday: H: 78° L: 45°
Sunny and pleasant.

LOW DESERT
Today: High: 102° Low: 7

Mostly sunny.

Tuesday: H: 103° L: 7
Plenty of sunshine.
Wednesday: H: 105° L: 7
Sunny and very warm
Thursday: H: 108° L: 8
Sunny and very warm
Friday: H: 110° L: 8
Hot with plenty of sun

Map city temperatures (today's highs / tonight's lows)

Lake Arrowhead 78/55 · Big Bear Lake 74/88 · Las Vegas 98/77 · Laughlin 102/80 · Needles 104/82 · Pasadena 85/65 · San Bernardino 91/64 · Redlands 91/62 · Los Angeles 82/65 · Ontario 89/65 · Fontana 90/65 · Colton 92/64 · Yucaipa 87/59 · LA Int'l Airport 77/66 · Anaheim 84/67 · Riverside 89/60 · Moreno Valley 91/68 · Banning 91/63 · Tram 67/56 · Palm Spring 102/78 · Long Beach 80/67 · Corona 90/64 · Ind 101 · Santa Ana 79/69 · Perris 91/62 · Hemet 92/62 · Idyllwild 85/62 · Rancho Mirage 102/79 · La Quinta 101/76 · Newport Beach 76/67 · Lake Elsinore 96/63 · Murrieta 88/63 · Blythe 101 · Temecula 87/63 · Oceanside 79/67 · Escondido 82/65 · San Diego 77/68

Temperatures are today's highs and tonight's lows.

INLAND TODAY
Low clouds giving way to sunshine. Winds northwest 6-12 mph. Clear to partly cloudy in the evening followed by low clouds tonight.

UV INDEX TODAY

COAST	INLAND	MOUNTAINS	LOW DESERT
7	8	9	8
High	Very High	Very High	Very High

The higher the AccuWeather.com UV Index™ number, the greater the need for eye and skin protection.
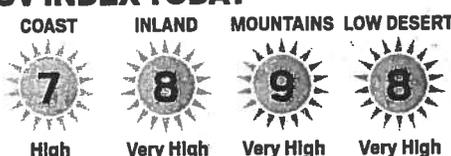
SURF REPORT TODAY

	Waves	Wind speed	Direction	Water temp.
Los Angeles	1-3 ft.	4-8 kts.	SW	67
Orange County	4-8 ft.	3-6 kts.	WSW	70
San Diego	2-4 ft.	4-8 kts.	WSW	69

TIDE REPORT

	Today		Tuesday	
	Highs	Lows	Highs	Lows
Los Angeles	5:13 a.m.	9:15 a.m.	6:41 a.m.	10:56 a.m.
Outer Harbor	4:06 p.m.	11:51 p.m.	5:21 p.m.	—
Newport Bch.	5:04 a.m.	9:15 a.m.	6:32 a.m.	10:56 a.m.
Balboa Pier	3:57 p.m.	11:51 p.m.	5:12 p.m.	—
San Diego	4:51 a.m.	9:15 a.m.	6:27 a.m.	10:56 a.m.
Broadway	4:04 p.m.	11:42 p.m.	5:20 p.m.	—

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Forecasts and graphics provided by AccuWeather, Inc. ©2018

Air Quality Forecast
Pollution standard index measures air quality by particles in the air.

NOT AVAILABLE	
GOOD	0-50 PS
MODERATE	51-100 I
UNHEALTHY FOR SENSITIVE GROUPS	101-150
UNHEALTHY	151-200
VERY UNHEALTHY	201-300
HAZARDOUS	301-500

Sources: South Coast Air Quality Management District; San Diego County Air Pollution Control District; Clark County NV Department of Air Quality

ALMANAC

Statistics for Sun.	Temperatures HI/Lo	Normal HI/Lo	Precipitation 24 hrs. through 4 p.m.	Season to date	Nor sea to
Season begins Oct. 1					
Beaumont	82/58	96/60	0.00	7.23	19
Big Bear Lake	73/45	78/45	0.00	9.45	20
Blythe	103/77	105/77	0.00	0.97	3
Corona	84/60	94/58	0.00	2.10	13
Fontana	84/63	92/60	0.00	5.82	
Hemet	88/60	97/59	0.00	7.18	1
Highland	84/63	96/62	0.00	9.74	13
Idyllwild	90/52	84/52	0.00	8.37	20
Lake Arrowhead	89/53	79/55	0.00	13.91	39
Lake Elsinore	91/65	98/61	0.00	3.78	12
Menifee	88/64	97/58	0.00	3.62	1
Moreno Valley	87/62	95/62	0.00	4.50	9
Murrieta	83/62	94/60	0.00	4.29	1
Ontario	84/64	93/65	0.00	2.46	15
Palm Springs	101/75	104/76	0.00	2.80	5
P.S. Tram	69/55	83/53	0.00	9.35	1
Redlands	83/63	95/61	0.00	3.98	13
Rialto	84/64	96/62	0.00	6.51	13
Riverside	83/60	94/61	0.00	2.53	10
San Bernardino	86/65	96/63	0.00	6.33	11
Temecula	82/63	82/62	0.00	5.89	1
Thermal	103/73	105/71	0.00	0.53	3
Yucaipa	78/55	91/59	0.00	7.65	9

CALIFORNIA

Hottest Spot
Death Valley — 112

Coldest Spot
Bodie State Park — 26

STATE EXTREMES FOR TUESDAY

NORTHWEST
Partly sunny today, except sunny toward Ukiah.

City	Today	Thu.	Fri.
Crscnt. City	60/49	60/49	59/51
Eureka	63/51	62/49	62/52
Ft. Bragg	69/52	73/52	72/56
Trinidad	60/51	59/50	61/53
Ukiah	93/52	92/52	95/53

SIERRA NEVADA
Sunshine today; a stray thunderstorm toward Mammoth Lakes.

City	Today	Thu.	Fri.
Bishop	92/54	94/55	97/55
Greenville	91/61	88/60	92/60
Mammoth	78/42	80/42	82/45
Tahoe Vly.	80/43	79/39	82/41
Yosemite	86/58	86/55	87/51

CENTRAL VALLEY
Plenty of sunshine today; hot. Clear tonight.

City	Today	Thu.	Fri.
Bakersfield	99/72	98/71	100/70
Fresno	100/68	99/67	100/68
Merced	97/61	94/61	97/62
Modesto	95/61	93/62	96/65
Sacto	89/56	89/58	95/60

BAY AREA
Low clouds giving way to sunshine today.

City	Today	Thu.	Fri.
Napa	81/52	84/53	92/55
Oakland	70/56	71/55	75/58
San Fran.	71/55	70/54	74/57
San Jose	80/59	80/57	85/60
Santa Cruz	69/56	72/54	76/55

CENTRAL COAST
Low clouds followed by sunshine today.

City	Today	Thu.	Fri.
Lompoc	72/55	71/55	75/59
Monterey	69/57	69/56	71/57
Pismo Bch.	72/56	72/56	83/55
S. L. Obispo	77/57	78/57	88/60
Santa Barb.	73/59	76/61	80/63

NORTHERN DESERT
Plenty of sunshine today. Clear tonight. Plenty of sun tomorrow.

City	Today	Thu.	Fri.
Baker	102/74	103/75	107/76
Barstow	101/72	101/73	104/76
Death Vly.	109/87	108/84	109/89
Lancaster	97/64	98/67	102/69
Victorville	93/59	93/62	97/64

SOUTHERN MTS. & VALLEYS
Clouds, then sun today, except sunny toward Idyllwild.

City	Today	Thu.	Fri.
Big Bear	75/43	77/45	80/46
Idyllwild	85/62	89/68	93/68
L. Arrowh'd	78/55	81/57	85/57
Monrovia	82/63	84/68	91/71
Riverside	89/61	91/62	97/67

SOUTH COAST
Low clouds giving way to sunshine today.

City	Today	Thu.	Fri.
Long Beach	80/66	80/65	85/70
Oceanside	79/66	79/66	81/67
San Diego	78/70	78/69	80/71
Santa Mon.	76/65	76/64	81/64
Ventura	73/62	73/61	77/63

SOUTHERN DESERT
Plenty of sunshine today.

City	Today	Thu.	Fri.
29 Palms	100/75	101/77	103/79
Blythe	104/79	106/81	109/82
El Centro	103/74	106/80	110/79
Needles	106/84	109/86	111/88
Palm Spgs.	105/78	107/81	111/83

COAST
Today: High: 76° Low: 66°
Low clouds, then sun.
Thursday: H: 76° L: 67° Clouds, then sun.
Friday: H: 79° L: 69° Mostly sunny.
Saturday: H: 84° L: 71° Mostly sunny and warm.
Sunday: H: 83° L: 66° Sunny and very warm.

INLAND
Today: High: 89° Low: 61°
Clouds breaking for sun.
Thursday: H: 91° L: 62° Plenty of sunshine.
Friday: H: 97° L: 67° Sunny and hot.
Saturday: H: 101° L: 65° Sunny and hot.
Sunday: H: 98° L: 62° Sunny and hot.

MOUNTAINS
Today: High: 75° Low: 43°
Sunny and pleasant.
Thursday: H: 77° L: 45° Sunny and nice.
Friday: H: 80° L: 46° Sunny and pleasant.
Saturday: H: 81° L: 45° Sunny and warm.
Sunday: H: 80° L: 43° Plenty of sunshine.

LOW DESERT
Today: High: 105° Low: [ ]
Sunny and very warm.
Thursday: H: 107° L: [ ] Sunny and very warm.
Friday: H: 111° L: [ ] Hot with plenty of sun.
Saturday: H: 112° L: [ ] Sunny and very hot.
Sunday: H: 111° L: [ ] Sunny and hot.

Temperatures are today's highs and tonight's lows.

[Regional map with city temperatures:]
Lake Arrowhead 78/55, Big Bear Lake 75/43, Las Vegas 98/79, Laughlin 104/81, Pasadena 84/64, San Bernardino 91/63, Redlands 91/60, Needles 106/84, Los Angeles 81/64, Ontario 88/64, Fontana 89/63, Colton 91/63, Yucaipa 88/58, LA Int'l Airport 76/67, Anaheim 83/65, Riverside 89/61, Moreno Valley 91/62, Banning 92/61, Tram 67/57, Palm Springs 105/78, Long Beach 80/66, Corona 88/62, Perris 91/60, Hemet 93/61, Idyllwild 85/62, Rancho Mirage 104/81, La Quinta 104/78, Santa Ana 79/66, Newport Beach 76/66, Lake Elsinore 90/61, Murrieta 87/60, Temecula 87/60, Oceanside 79/66, Escondido 82/64, San Diego 78/70

INLAND TODAY
Low clouds giving way to sunshine. Winds northwest 6-12 mph.

UV INDEX TODAY

COAST	INLAND	MOUNTAINS	LOW DESERT
7	7	9	8
High	High	Very High	Very High

The higher the AccuWeather.com UV Index™ number, the greater the need for eye and skin protection.

SURF REPORT TODAY

	Waves	Wind speed	Direction	Water temp.
Los Angeles	1-3 ft.	4-8 kts.	WSW	71
Orange County	3-5 ft.	3-6 kts.	WSW	71
San Diego	2-4 ft.	4-8 kts.	WNW	73

TIDE REPORT

	Today Highs	Today Lows	Thursday Highs	Thursday Lows
Los Angeles Outer Harbor	7:31 a.m. / 6:25 p.m.	12:50 a.m. / 12:13 p.m.	8:10 a.m. / 7:20 p.m.	1:38 a.m. / 1:12 p.m.
Newport Bch. Balboa Pier	7:22 a.m. / 6:16 p.m.	12:50 a.m. / 12:13 p.m.	8:01 a.m. / 7:11 p.m.	1:38 a.m. / 1:12 p.m.
San Diego Broadway	7:22 a.m. / 6:24 p.m.	12:44 a.m. / 12:12 p.m.	8:03 a.m. / 7:20 p.m.	1:33 a.m. / 1:11 p.m.

Online PE.com/weather/

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Air Quality Forecast
Pollution standard index measures air quality by particles in the air.

NOT AVAILABLE	
GOOD	0-50 PSI
MODERATE	51-100 PSI
UNHEALTHY FOR SENSITIVE GROUPS	101-150
UNHEALTHY	151-200
VERY UNHEALTHY	201-300
HAZARDOUS	301-500

Sources: South Coast Air Quality Management District, San Diego County Air Pollution Control District, Clark County NV Department of Air Quality

ALMANAC

Statistics for Tue. Season begins Oct. 1	Temperatures HI/Lo	Normal HI/Lo	Precipitation 24 hrs. through 4 p.m.	Season to date	Normal season total
Beaumont	93/58	95/59	0.00	7.23	19.3
Big Bear Lake	75/45	77/45	0.00	9.45	20.
Blythe	103/78	105/77	0.00	0.97	3.
Corona	83/61	93/58	0.00	2.10	13.3
Fontana	89/63	92/60	0.00	5.82	9.
Hemet	92/60	97/59	0.00	7.18	11.
Highland	90/63	96/62	0.00	9.74	13.9
Idyllwild	92/54	84/52	0.00	8.37	26.
Lake Arrowhead	85/54	79/55	0.00	13.91	39.
Lake Elsinore	97/64	97/61	0.00	3.78	12.4
Menifee	91/63	97/58	0.00	3.62	11.
Moreno Valley	93/62	95/62	0.00	4.50	9.4
Murrieta	84/62	93/60	0.00	4.29	11.6
Ontario	88/65	92/65	0.00	2.46	15.0
Palm Springs	103/76	104/76	0.00	2.80	5.8
P.S. Tram	67/51	83/53	0.00	9.35	11.
Redlands	86/64	95/61	0.00	3.98	13.2
Rialto	89/64	96/62	0.00	6.51	13.9
Riverside	89/60	94/61	0.00	2.53	10.3
San Bernardino	91/66	96/63	0.00	6.33	16.0
Temecula	84/62	82/62	0.00	5.89	11.7
Thermal	105/74	104/70	0.00	0.53	3.2
Yucaipa	85/58	91/59	0.00	7.65	9.4

CALIFORNIA

Hottest Spot
Death Valley 112
Coldest Spot
Bodie State Park 26
STATE EXTREMES FOR WEDNESDAY

NORTHWEST
Low clouds followed by sunshine today; however, sunny toward Ukiah.

City	Today	Fri.	Sat.
Cscnt. City	61/51	62/50	64/52
Eureka	62/54	64/51	63/50
Ft. Bragg	67/54	74/52	75/53
Trinidad	60/53	62/51	61/50
Ukiah	80/51	87/51	92/53

SIERRA NEVADA
Sunshine today; pleasant toward Mammoth Lakes. Mainly clear tonight.

City	Today	Fri.	Sat.
Bishop	95/52	94/51	94/53
Greenville	79/53	84/58	89/59
Mammoth	79/38	79/38	79/41
Tahoe Vly.	74/34	75/36	79/39
Yosemite	81/48	82/51	84/53

CENTRAL VALLEY
Mostly sunny today. Mostly clear tonight. Mostly sunny tomorrow.

City	Today	Fri.	Sat.
Bakersfield	88/63	90/65	95/67
Fresno	88/61	91/63	94/65
Merced	85/56	88/58	93/58
Modesto	84/57	89/60	92/61
Sacto	80/55	88/58	90/57

BAY AREA
Low clouds giving way to sunshine today.

City	Today	Fri.	Sat.
Napa	76/52	84/54	85/53
Oakland	71/57	71/56	71/55
San Fran.	71/56	71/56	71/56
San Jose	76/58	79/58	81/58
Santa Cruz	71/56	73/56	69/55

CENTRAL COAST
Clouds, then sun today; however, sunshine toward Santa Barbara.

City	Today	Fri.	Sat.
Lompoc	71/55	73/54	70/56
Monterey	68/56	67/56	67/55
Pismo Bch.	73/55	77/55	76/55
S. L. Obispo	77/56	82/56	81/56
Santa Barb.	79/60	82/61	77/60

NORTHERN DESERT
Mostly sunny today. Mainly clear tonight. Mostly sunny tomorrow.

City	Today	Fri.	Sat.
Baker	105/74	104/72	105/73
Barstow	103/71	102/66	102/70
Death Vly.	109/84	107/83	108/80
Lancaster	95/65	95/63	98/64
Victorville	94/61	94/58	94/61

SOUTHERN MTS. & VALLEYS
Mostly sunny today. Mainly clear tonight. Mostly sunny tomorrow.

City	Today	Fri.	Sat.
Big Bear	78/54	78/43	77/48
Idyllwild	86/61	89/60	90/61
L. Arrowh'd	81/56	82/52	82/54
Monrovia	86/66	88/65	86/65
Riverside	94/61	95/60	94/61

SOUTH COAST
Mostly sunny today. Mainly clear tonight. Mostly sunny tomorrow.

City	Today	Fri.	Sat.
Long Beach	85/67	85/68	84/69
Oceanside	82/64	83/65	82/66
San Diego	81/69	81/69	80/70
Santa Mon.	80/66	80/65	80/67
Ventura	75/62	77/62	77/63

SOUTHERN DESERT
Mostly sunny and very warm today. Mainly clear tonight.

City	Today	Fri.	Sat.
29 Palms	103/73	103/72	104/73
Blythe	107/80	107/80	106/79
El Centro	108/77	109/76	107/75
Needles	109/85	110/85	107/85
Palm Spgs.	109/79	109/78	109/78

COAST
Today: High: 79° Low: 67°

Mostly sunny.

Friday: H: 80° L: 68°
Sunshine and nice.
Saturday: H: 80° L: 69°
Partly cloudy.
Sunday: H: 78° L: 67°
Partly cloudy.
Monday: H: 77° L: 67°
Partly sunny.

INLAND
Today: High: 94° Low: 61°

Mostly sunny.

Friday: H: 95° L: 60°
Mostly sunny.
Saturday: H: 94° L: 61°
Mostly sunny.
Sunday: H: 89° L: 60°
Mostly sunny.
Monday: H: 90° L: 60°
Mostly sunny.

MOUNTAINS
Today: High: 78° Low: 54°
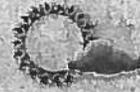
Mostly sunny and nice.

Friday: H: 78° L: 43°
Mostly sunny; pleasant.
Saturday: H: 77° L: 48°
Sunny and beautiful.
Sunday: H: 74° L: 49°
Mostly sunny.
Monday: H: 73° L: 44°
Mostly sunny.

LOW DESERT
Today: High: 109° Low: 79°

Mostly sunny and warm.

Friday: H: 109° L: 78°
Mostly sunny and warm.
Saturday: H: 109° L: 78°
Sunny and very warm.
Sunday: H: 106° L: 77°
Mostly sunny and warm.
Monday: H: 104° L: 78°
Mostly sunny and warm.

Temperatures are today's highs and tonight's lows.

Map temperatures (highs/lows):
- Lake Arrowhead 81/56
- Big Bear Lake 79/54
- Las Vegas 102/79
- Laughlin 108/81
- Needles 109/85
- Pasadena 89/65
- San Bernardino 96/63
- Redlands 95/61
- Los Angeles 87/66
- Ontario 94/65
- Fontana 95/64
- Colton 97/63
- Yucaipa 92/59
- LA Int'l Airport 78/67
- Anaheim 88/65
- Riverside 94/61
- Moreno Valley 95/61
- Banning 95/63
- Tram 72/58
- Palm Spring 109/79
- Long Beach 85/67
- Corona 95/61
- Santa Ana 83/69
- Perris 96/59
- Hemet 98/61
- Idyllwild 86/61
- Rancho Mirage 109/80
- Newport Beach 79/67
- Lake Elsinore 98/59
- Murrieta 93/57
- La Quinta 108/78
- Temecula 93/57
- Oceanside 82/64
- Escondido 89/66
- San Diego 81/69
- Indio 108
- Mecca 107
- Blythe 107/79

INLAND TODAY
Mostly sunny. Winds west-northwest 4-8 mph. Mostly clear tonight. Winds light and variable.

UV INDEX TODAY

COAST	INLAND	MOUNTAINS	LOW DESERT
9	9	10	9
Very High	Very High	Very High	Very High

The higher the AccuWeather.com UV Index™ number, the greater the need for eye and skin protection.

SURF REPORT TODAY

	Waves	Wind speed	Direction	Water temp.
Los Angeles	2-4 ft.	4-8 kts.	WSW	70
Orange County	2-4 ft.	4-8 kts.	WNW	69
San Diego	2-4 ft.	6-12 kts.	WNW	70

TIDE REPORT

	Today Highs	Today Lows	Friday Highs	Friday Lows
Los Angeles	12:19 p.m.	5:57 a.m.	12:23 a.m.	6:27 a.m.
Outer Harbor	---	6:28 p.m.	12:57 p.m.	7:31 p.m.
Newport Bch.	12:10 p.m.	5:57 a.m.	12:14 a.m.	6:27 a.m.
Balboa Pier	---	6:28 p.m.	12:48 p.m.	7:31 p.m.
San Diego	12:13 p.m.	5:53 a.m.	12:17 a.m.	6:22 a.m.
Broadway	---	6:22 p.m.	12:50 p.m.	7:22 p.m.

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Air Quality Forecast
Pollution-standard index measures air quality by particles in the air.

- NOT AVAILABLE
- GOOD — 0-50 PSI
- MODERATE — 51-100 P
- UNHEALTHY FOR SENSITIVE GROUPS — 101-150
- UNHEALTHY — 151-200
- VERY UNHEALTHY — 201-300
- HAZARDOUS — 301-500

Sources: South Coast Air Quality Management District; San Diego County Air Pollution Control District; Clark County, NV Department of Air Quality.

ALMANAC

Statistics for Wed. Season begins Oct. 1	Temperatures HI/Lo	Normal HI/Lo	24 hrs. through 4 p.m.	Precipitation Season to date	Norm seas tota
Beaumont	91/61	96/60	0.00	7.23	19.
Big Bear Lake	79/47	78/46	0.00	9.45	20.
Blythe	105/76	106/78	0.00	0.97	3.
Corona	91/58	94/59	0.00	2.10	13.
Fontana	91/64	92/60	0.00	5.82	9.
Hemet	95/63	97/59	0.00	7.18	11.
Highland	91/63	97/63	0.00	9.74	13.
Idyllwild	84/60	85/53	0.00	8.37	26.
Lake Arrowhead	82/56	80/56	0.00	13.91	39.
Lake Elsinore	99/63	98/62	0.00	3.78	12.
Menifee	91/62	98/59	0.00	3.62	11
Moreno Valley	95/63	95/62	0.00	4.50	9.
Murrieta	91/60	94/61	0.00	4.29	11.
Ontario	92/65	93/65	0.00	2.46	15.0
Palm Springs	108/76	105/77	0.00	2.80	1.5
P.S. Tram	74/55	63/53	0.00	9.35	11
Redlands	95/62	96/62	0.00	3.98	13.
Rialto	92/66	97/63	0.00	6.51	13.9
Riverside	92/59	95/62	0.00	2.53	10.
San Bernardino	95/64	97/63	0.00	6.33	16.
Temecula	92/61	82/63	0.00	5.89	11
Thermal	109/74	105/72	0.00	0.53	3.
Yucaipa	85/62	91/59	0.00	7.65	9.

CALIFORNIA

Hottest Spot
El Centro 110
Coldest Spot
Bodie State Park 30
STATE EXTREMES FOR TUESDAY

NORTHWEST
Clouds, then sun near Eureka today; mostly sunny elsewhere.

City	Today	Thu.	Fri.
Crscnt. City	60/52	61/53	61/51
Eureka	62/53	61/52	62/52
Ft. Bragg	66/55	68/54	71/54
Trinidad	60/52	60/52	60/52
Ukiah	81/49	81/51	89/51

SIERRA NEVADA
Mostly sunny today. Mainly clear tonight. Sunshine tomorrow.

City	Today	Thu.	Fri.
Bishop	95/51	95/51	94/51
Greenville	82/54	80/53	84/57
Mammoth	80/37	80/34	80/40
Tahoe Vly.	77/39	75/34	77/38
Yosemite	81/52	80/48	82/48

CENTRAL VALLEY
Hazy sunshine today. Clear to partly cloudy tonight.

City	Today	Thu.	Fri.
Bakersfield	91/63	89/63	90/66
Fresno	89/61	90/61	91/64
Merced	85/57	85/55	89/57
Modesto	85/57	84/57	89/60
Sacto	80/57	81/54	89/58

BAY AREA
Low clouds giving way to sunshine today.

City	Today	Thu.	Fri.
Napa	75/55	76/53	84/54
Oakland	72/60	70/57	71/56
San Fran.	72/59	70/56	71/56
San Jose	78/60	76/57	79/57
Santa Cruz	68/59	70/56	71/56

CENTRAL COAST
Low clouds followed by sunshine today.

City	Today	Thu.	Fri.
Lompoc	70/55	72/54	70/57
Monterey	70/59	68/56	68/55
Pismo Bch.	70/56	73/55	77/56
S. L. Obispo	75/58	78/56	82/58
Santa Barb.	76/60	79/60	80/61

NORTHERN DESERT
Mostly sunny today. Mainly clear tonight. Mostly sunny tomorrow.

City	Today	Thu.	Fri.
Baker	103/74	105/73	104/71
Barstow	102/72	101/71	101/70
Death Vly.	109/85	107/80	107/83
Lancaster	93/65	96/65	96/62
Victorville	93/59	94/60	95/59

SOUTHERN MTS. & VALLEYS
Sunshine today; clouds, then sun Monrovia.

City	Today	Thu.	Fri.
Big Bear	77/47	77/46	78/45
Idyllwild	85/61	88/63	89/61
L. Arrowh'd	79/56	81/55	83/54
Monrovia	84/65	87/68	89/67
Riverside	92/62	94/62	94/62

SOUTH COAST
Low clouds giving way to sunshine today.

City	Today	Thu.	Fri.
Long Beach	84/67	85/68	85/68
Oceanside	82/65	82/65	83/65
San Diego	81/70	81/69	81/70
Santa Mon.	79/65	79/65	79/65
Ventura	74/61	76/60	77/61

SOUTHERN DESERT
Mostly sunny and very warm today. Mainly clear tonight.

City	Today	Thu.	Fri.
29 Palms	102/73	103/73	103/72
Blythe	106/79	108/79	108/79
El Centro	107/77	109/78	109/78
Needles	108/85	110/84	110/85
Palm Spgs.	108/79	109/79	109/80

COAST
Today: High: 79° Low: 67°
Low clouds, then sun.
Thursday: H: 81° L: 67° Low clouds, then sun.
Friday: H: 79° L: 68° Partly sunny and nice.
Saturday: H: 79° L: 69° Partly cloudy.
Sunday: H: 79° L: 67° Partly cloudy.

INLAND
Today: High: 92° Low: 62°
Sunny to partly cloudy.
Thursday: H: 94° L: 62° Mostly sunny.
Friday: H: 94° L: 62° Mostly sunny.
Saturday: H: 94° L: 61° Mostly sunny.
Sunday: H: 92° L: 60° Mostly sunny.

MOUNTAINS
Today: High: 77° Low: 47°
Mostly sunny; pleasant.
Thursday: H: 77° L: 46° Mostly sunny and nice.
Friday: H: 78° L: 45° Mostly sunny and nice.
Saturday: H: 77° L: 46° Sunshine and pleasant.
Sunday: H: 76° L: 43° Mostly sunny.

LOW DESERT
Today: High: 108° Low:
Mostly sunny and war
Thursday: H: 109° L: Mostly sunny and nice.
Friday: H: 109° L: Very warm with sunsh
Saturday: H: 109° L: Sunny and very warn
Sunday: H: 107° L: Mostly sunny and war

Temperatures are today's highs and tonight's lows.

(Map locations)
Pasadena 86/85 · Lake Arrowhead 79/56 · Big Bear Lake 77/47 · Las Vegas 101/78 · Laughlin 107/81 · San Bernardino 93/64 · Redlands 93/61 · Needles 108/85 · Los Angeles 84/65 · Ontario 91/65 · Fontana 92/63 · Colton 94/63 · Yucaipa 89/58 · LA Int'l Airport 78/67 · Anaheim 88/65 · Riverside 92/62 · Moreno Valley 94/61 · Banning 93/63 · Tram 71/59 · Palm Springs 108/79 · Long Beach 84/67 · Corona 94/62 · Santa Ana 82/68 · Perris 93/59 · Hemet 95/61 · Idyllwild 85/61 · Rancho Mirage 108/80 · Newport Beach 79/67 · Lake Elsinore 93/61 · Murrieta 91/59 · La Quinta 107/79 · Temecula 91/59 · Oceanside 82/65 · Escondido 87/62 · San Diego 81/70

INLAND TODAY
Sunshine and patchy clouds. Winds northwest 4-8 mph. Clear to partly cloudy tonight. Winds north-northeast 3-6 mph.

UV INDEX TODAY
COAST 8 Very High · INLAND 9 Very High · MOUNTAINS 10 Very High · LOW DESERT 9 Very High
The higher the AccuWeather.com UV Index™ number, the greater the need for eye and skin protection.

SURF REPORT TODAY

	Waves	Wind speed	Direction	Water temp.
Los Angeles	1-3 ft.	4-8 kts.	WSW	71
Orange County	3-5 ft.	3-6 kts.	WSW	70
San Diego	2-4 ft.	6-12 kts.	NW	70

TIDE REPORT

	Today Highs	Today Lows	Thursday Highs	Thursday Lows
Los Angeles	11:47 a.m.	5:30 a.m.	12:19 p.m.	5:57 a.m.
Outer Harbor	11:38 p.m.	5:40 p.m.	—	6:28 p.m.
Newport Bch.	11:38 a.m.	5:30 a.m.	12:10 p.m.	5:57 a.m.
Balboa Pier	11:29 p.m.	5:40 p.m.	—	6:28 p.m.
San Diego	11:41 a.m.	5:25 a.m.	12:13 p.m.	5:53 a.m.
Broadway	11:34 p.m.	5:35 p.m.	—	6:22 p.m.

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Air Quality Forecast
Pollution standard index measures air quality by particles in the air.
- NOT AVAILABLE
- GOOD 0-50 PSI
- MODERATE 51-100 P
- UNHEALTHY FOR SENSITIVE GROUPS 101-150
- UNHEALTHY 151-200
- VERY UNHEALTHY 201-300
- HAZARDOUS 301-500
Sources: South Coast Air Quality Management District, San Diego County Air Pollution Control District, Clark County, NV Department of Air Quality

ALMANAC

Statistics for Tue. Season begins Oct. 1	Temperatures HI/Lo	Normal HI/Lo	24 hrs. through 4 p.m.	Precipitation Season to date	Norm seas tota
Beaumont	87/57	96/60	0.00	7.23	19.3
Big Bear Lake	75/50	78/46	0.00	9.45	20.1
Blythe	107/78	106/78	0.00	0.97	3.6
Corona	87/56	94/59	0.00	2.10	13.3
Fontana	88/61	92/60	0.00	5.82	9.1
Hemet	90/59	98/60	0.00	7.18	11.7
Highland	88/61	97/63	0.00	9.74	13.9
Idyllwild	79/60	85/53	0.00	8.37	26.1
Lake Arrowhead	79/60	80/56	0.00	13.91	39.6
Lake Elsinore	95/61	98/62	0.00	3.78	12.4
Menifee	89/61	98/59	0.00	3.62	11.1
Moreno Valley	91/60	95/62	0.00	4.50	9.4
Murrieta	86/58	94/61	0.00	4.29	11.6
Ontario	88/62	93/65	0.00	2.46	15.0
Palm Springs	105/75	105/77	0.00	2.80	5.8
P.S. Tram	72/55	84/53	0.00	9.35	11.7
Redlands	89/60	96/62	0.00	3.98	13.2
Rialto	89/61	97/63	0.00	6.51	13.9
Riverside	89/57	95/62	0.00	2.53	10.3
San Bernardino	91/64	97/64	0.00	6.33	16.0
Temecula	86/61	82/63	0.00	5.89	11.7
Thermal	107/66	105/72	0.00	0.53	3.2
Yucaipa	82/60	92/59	0.00	7.65	9.4

CALIFORNIA

Hottest Spot
Death Valley — 113
Coldest Spot
Tuolumne Meadows — 29
STATE EXTREMES FOR THURSDAY

NORTHWEST
Low clouds followed by sunshine today, but mostly sunny toward Ukiah.

City	Today	Sat.	Sun.
Crscnt City	63/51	61/52	64/53
Eureka	63/52	62/50	63/52
Ft. Bragg	68/53	72/53	73/53
Trinidad	61/52	60/50	61/53
Ukiah	87/51	97/53	97/55

SIERRA NEVADA
Sunny today; pleasant toward Mammoth Lakes. Mainly clear tonight.

City	Today	Sat.	Sun.
Bishop	93/51	93/50	95/53
Greenville	84/59	90/61	91/60
Mammoth	79/37	79/37	81/42
Tahoe Vly.	75/37	78/38	82/41
Yosemite	81/51	83/52	85/53

CENTRAL VALLEY
Mostly sunny today. Mainly clear tonight. Mostly sunny tomorrow.

City	Today	Sat.	Sun.
Bakersfield	89/65	93/67	97/69
Fresno	91/64	94/65	98/67
Merced	89/58	92/60	97/61
Modesta	89/60	92/61	96/62
Sacto.	88/58	91/58	92/58

BAY AREA
Low clouds giving way to sunshine today.

City	Today	Sat.	Sun.
Napa	83/53	85/54	84/54
Oakland	72/55	71/55	72/55
San Fran.	71/56	70/55	72/56
San Jose	80/58	80/57	81/58
Santa Cruz	74/56	71/56	70/56

CENTRAL COAST
Clouds; then sun today, but mostly sunny toward Santa Barbara.

City	Today	Sat.	Sun.
Lompoc	73/54	71/54	70/55
Monterey	68/56	66/55	67/55
Pismo Bch.	77/55	75/54	73/55
S. L. Obispo	81/56	80/55	78/57
Santa Barb.	80/61	79/60	75/61

NORTHERN DESERT
Mostly sunny today. Mainly clear tonight. Mostly sunny tomorrow.

City	Today	Sat.	Sun.
Baker	104/70	103/72	105/73
Barstow	102/68	100/68	100/71
Death Vly.	109/84	109/79	108/82
Lancaster	94/64	97/63	97/64
Victorville	94/57	93/59	93/60

SOUTHERN MTS. & VALLEYS
Mostly sunny today. Clear to partly cloudy tonight.

City	Today	Sat.	Sun.
Big Bear	80/46	78/42	75/46
Idyllwild	86/60	86/61	88/61
L. Arrow'd	81/54	80/53	79/53
Monrovia	86/66	84/64	84/62
Riverside	94/59	91/60	89/61

SOUTH COAST
Mostly sunny today; pleasant toward Ventura.

City	Today	Sat.	Sun.
Long Beach	85/68	82/69	80/69
Oceanside	82/66	81/67	79/66
Santa M.	80/70	80/70	78/69
Ventura	79/66	80/67	78/66
	78/62		76/63

SOUTHERN DESERT
Mostly sunny and very warm today. Mainly clear tonight.

City	Today	Sat.	Sun.
29 Palms	103/72	101/72	100/73
Blythe	107/77	104/76	103/77
El Centro	108/74	106/73	103/75
Needles	109/82	108/80	106/85
Palm	108/78	105/78	105/79

COAST
Today: High: 79° Low: 68°

Beautiful with sunshine.
Saturday: H: 79° L: 69°
Partly cloudy.
Sunday: H: 77° L: 69°
Partly cloudy.
Monday: H: 76° L: 68°
Partly cloudy.
Tuesday: H: 75° L: 68°
Turning sunny.

INLAND
Today: High: 94° Low: 59°

Mostly sunny.
Saturday: H: 91° L: 60°
Mostly sunny.
Sunday: H: 89° L: 61°
Mostly sunny.
Monday: H: 88° L: 61°
Mostly sunny.
Tuesday: H: 88° L: 60°
Sunny much of the time.

MOUNTAINS
Today: High: 80° Low: 46°

Mostly sunny; pleasant.
Saturday: H: 78° L: 42°
Sunshine and pleasant.
Sunday: H: 75° L: 46°
Mostly sunny.
Monday: H: 74° L: 46°
Sunshine and beautiful.
Tuesday: H: 72° L: 45°
Sunshine and pleasant.

LOW DESERT
Today: High: 108° Low: 7

Mostly sunny and warm.
Saturday: H: 106° L: 7
Sunny and very warm.
Sunday: H: 105° L: 7
Mostly sunny.
Monday: H: 104° L: 7
Mostly sunny.
Tuesday: H: 102° L: 7
Mostly sunny and warm.

Lake Arrowhead 81/54
Palisada 95/63
San Bernardino 96/63
Redlands 96/60
Big Bear Lake 80/46
Las Vegas 102/76
Laughlin 108/79
Los Angeles 87/66
Ontario 93/65
Fontana 94/64
Colton 97/62
Yucaipa 92/57
Needles 109/82
LA Int'l Airport 79/68
Long Beach 85/68
Anaheim 86/66
Riverside 94/59
Moreno Valley 96/60
Banning 95/61
Tram 78/59
Palm Springs 108/78
Corona 96/62
Santa Ana 83/69
Perris 96/58
Hemet 98/60
Idyllwild 86/60
Rancho Mirage 106/79
Newport Beach 79/68
Lake Elsinore 98/60
Murrieta 93/58
La Quinta 108/78
Temecula 93/57
Oceanside 82/66
Escondido 89/62
San Diego 80/70

Temperatures are today's highs and tonight's lows.

INLAND TODAY
Mostly sunny. Winds northwest 4-8 mph. Mainly clear tonight. Winds light and variable.

UV INDEX TODAY

	COAST	INLAND	MOUNTAINS	LOW DESERT
	9	9	9	9
	Very High	Very High	Very High	Very High

The higher the AccuWeather.com UV Index™ number, the greater the need for eye and skin protection.

SURF REPORT TODAY

	Waves	Wind speed	Direction	Water temp.
Los Angeles	2-4 ft.	4-8 kts.	SW	69
Orange County	3-6 ft.	4-8 kts.	NW	69
San Diego	3-5 ft.	4-8 kts.	W	68

TIDE REPORT

	Today Highs	Lows	Saturday Highs	Lows
Los Angeles	12:23 a.m.	6:27 a.m.	1:23 a.m.	7:02 a.m.
Outer Harbor	12:57 p.m.	7:31 p.m.	1:44 p.m.	8:54 p.m.
Newport Bch.	12:14 a.m.	6:27 a.m.	1:14 a.m.	7:02 a.m.
Balboa Pier	12:48 p.m.	7:31 p.m.	1:35 p.m.	8:54 p.m.
San Diego	12:17 a.m.	6:22 a.m.	1:15 a.m.	6:56 a.m.
Broadway		7:22 p.m.	1:38 p.m.	8:42 p.m.

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Forecasts and graphics provided by

Air Quality Forecast
Pollution standard index measures air quality by particles in the air.

○	NOT AVAILABLE	
●	GOOD	0–50 PSI
○	MODERATE	51–100 P
●	UNHEALTHY FOR SENSITIVE GROUPS	101–150
●	UNHEALTHY	151–200
●	VERY UNHEALTHY	201–30
●	HAZARDOUS	301–500

Sources: South Coast Air Quality Management District, San Diego County Air Pollution Control District, State Gov'nt, NV Department of Air Quality

ALMANAC

Statistics for Thu. Season begins Oct. 1	Temperatures HI/Lo	Normal HI/Lo	Precipitation 24 hrs. through 4 p.m.	Season to date	Norm seas tot
Beaumont	94/60	96/60	0.00	7.23	19
Big Bear Lake	78/48	78/46	0.00	9.45	20
Blythe	106/83	106/78	0.00	0.97	3.
Corona	94/52	94/59	0.00	2.10	13.
Fontana	93/63	92/60	0.00	5.82	9
Hemet	96/64	97/59	0.00	7.18	11
Highland	95/63	97/63	0.00	9.74	13
Idyllwild	85/52	84/53	0.00	8.37	26
Lake Arrowhead	84/64	80/56	0.00	13.91	39
Lake Elsinore	100/62	98/62	0.00	3.78	12
Menifee	93/62	98/59	0.00	3.62	11
Moreno Valley	98/64	95/62	0.00	4.50	9.
Murrieta	90/60	94/61	0.00	4.29	11
Ontario	95/65	93/65	0.00	2.46	15.
Palm Springs	108/79	105/77	0.00	2.80	5
P.S. Tram	74/57	82/59	0.00	9.38	11
Redlands	96/61	95/62	0.00	3.98	14
Rialto	96/66	97/63	0.00	6.51	13.
Riverside	95/58	95/61	0.00	2.53	10
San Bernardino	99/64	97/63	0.00	6.33	16
Temecula	94/60	82/62	0.00	5.89	11
Thermal			0.00	0.53	3.

CALIFORNIA

Hottest Spot
Needles 110
Coldest Spot
Bodie State Park ... 21
STATE EXTREMES FOR FRIDAY

NORTHWEST
Low clouds followed by sunshine today, but mostly sunny toward Ukiah.

City	Today	Sun.	Mon.
Crscnt. City	62/49	63/51	66/52
Eureka	63/50	64/49	67/51
Ft. Bragg	68/53	74/54	74/52
Trinidad	61/50	63/50	65/51
Ukiah	92/52	99/55	97/58

SIERRA NEVADA
Mostly sunny today; pleasant toward Mammoth Lakes.

City	Today	Sun.	Mon.
Bishop	93/49	96/51	94/56
Greenville	90/61	92/62	92/62
Mammoth	79/38	81/40	79/44
Tahoe Vly.	78/38	82/41	81/42
Yosemite	83/55	86/55	83/50

CENTRAL VALLEY
Mostly sunny today. Hazy tonight. Mostly sunny tomorrow.

City	Today	Sun.	Mon.
Bakersfield	92/66	96/70	99/70
Fresno	94/64	98/66	99/68
Merced	91/58	95/60	96/61
Modesto	91/60	95/61	95/63
Sacto.	90/56	92/57	92/59

BAY AREA
Low clouds followed by sunshine today.

City	Today	Sun.	Mon.
Napa	84/54	85/54	86/54
Oakland	71/55	71/55	73/56
San Fran.	69/54	72/53	74/56
San Jose	79/58	83/59	82/60
Santa Cruz	72/56	72/56	70/56

CENTRAL COAST
Clouds, then sun today, but mostly sunny toward Santa Barbara.

City	Today	Sun.	Mon.
Lompoc	71/54	72/55	69/55
Monterey	66/55	68/55	70/55
Pismo Bch.	74/55	72/56	72/56
S. L. Obispo	79/53	79/55	76/57
Santa Barb.	77/61	76/61	74/60

NORTHERN DESERT
Mostly sunny today. Mostly clear tonight. Mostly sunny tomorrow.

City	Today	Sun.	Mon.
Baker	103/73	102/73	101/74
Barstow	100/68	100/68	98/71
Death Vly.	110/86	108/82	106/87
Lancaster	96/63	96/62	96/65
Victorville	93/58	92/59	91/62

SOUTHERN MTS. & VALLEYS
Mostly sunny today. Mainly clear tonight. Mostly sunny tomorrow.

City	Today	Sun.	Mon.
Big Bear	77/42	74/42	71/43
Idyllwild	85/60	85/62	86/64
L. Arrowh'd	80/54	78/53	77/54
Monrovia	84/63	82/63	82/61
Riverside	92/57	89/59	88/59

SOUTH COAST
Partly sunny today; pleasant toward Ventura. Partly cloudy tonight.

City	Today	Sun.	Mon.
Long Beach	82/68	79/66	79/68
Oceanside	80/67	80/66	78/64
San Diego	79/70	77/67	77/68
Santa Mon.	80/68	79/66	76/65
Ventura	76/64	76/65	75/63

SOUTHERN DESERT
Sunny and very warm today. Clear to partly cloudy tonight.

City	Today	Sun.	Mon.
29 Palms	101/73	99/73	96/74
Blythe	105/77	102/76	101/76
El Centro	107/75	103/75	100/75
Needles	107/81	105/81	104/84
Palm Spgs.	106/77	103/77	101/79

COAST
Today: High: 78° Low: 68°

Partly cloudy.
Sunday: H: 77° L: 67°
Partly cloudy.
Monday: H: 75° L: 66°
Partly cloudy.
Tuesday: H: 75° L: 67°
Turning sunny.
Wednesday: H: 76° L: 68°
Sunny intervals; nice.

INLAND
Today: High: 92° Low: 57°

Mostly sunny.
Sunday: H: 89° L: 59°
Mostly sunny.
Monday: H: 88° L: 59°
Mostly sunny.
Tuesday: H: 90° L: 60°
Mostly sunny.
Wednesday: H: 91° L: 58°
Sunny.

MOUNTAINS
Today: High: 77° Low: 42°

Sunshine and pleasant.
Sunday: H: 74° L: 42°
Mostly sunny.
Monday: H: 71° L: 43°
Sunshine and beautiful.
Tuesday: H: 73° L: 42°
Mostly sunny and nice.
Wednesday: H: 73° L: 40°
Plenty of sunshine.

LOW DESERT
Today: High: 106° Low: 77°

Sunny and very warm.
Sunday: H: 103° L: 77°
Mostly sunny.
Monday: H: 101° L: 79°
Mostly sunny.
Tuesday: H: 104° L: 79°
Mostly sunny and warm.
Wednesday: H: 104° L: 79°
Sunny and very warm.

Temperatures are today's highs and tonight's lows.

Map temperatures

Lake Arrowhead 80/54
Las Vegas 102/77
Pasadena 87/66
Big Bear Lake 77/42
Laughlin 106/80
San Bernardino 93/63
Redlands 93/60
Needles 107/81
Los Angeles 85/66
Ontario 91/68
Fontana 92/63
Colton 94/68
Yucaipa 89/56
LA Int'l Airport 79/68
Anaheim 86/67
Riverside 92/57
Moreno Valley 93/60
Banning 92/61
Tram 70/57
Palm Springs 106/77
Long Beach 82/68
Corona 93/62
Indio 106/7
Santa Ana 81/69
Perris 93/60
Hemet 94/60
Idyllwild 85/60
Rancho Mirage 101/78
Newport Beach 78/68
Lake Elsinore 92/61
Murrieta 89/61
La Quinta 106/77
Temecula 89/60
Blythe 105/77
Mecca 106/76
Oceanside 80/67
Escondido 85/64
San Diego 79/70

INLAND TODAY
Mostly sunny. Winds northwest 4-8 mph. Mainly clear tonight. Winds south-southwest 3-6 mph.

UV INDEX TODAY

COAST	INLAND	MOUNTAINS	LOW DESERT
8	9	9	8
Very High	Very High	Very High	Very High

The higher the AccuWeather.com UV Index™ number, the greater the need for eye and skin protection.

SURF REPORT TODAY

	Waves	Wind speed	Direction	Water temp.
Los Angeles	2-4 ft.	4-8 kts.	SSW	67
Orange County	4-8 ft.	4-8 kts.	NW	67
San Diego	3-6 ft.	6-12 kts.	SW	67

TIDE REPORT

	Today		Sunday	
	Highs	Lows	Highs	Lows
Los Angeles	1:23 a.m.	7:02 a.m.	3:00 a.m.	7:51 a.m.
Outer Harbor	1:44 p.m.	8:54 p.m.	2:48 p.m.	10:31 p.m.
Newport Bch.	1:14 a.m.	7:02 a.m.	2:51 a.m.	7:51 a.m.
Balboa Pier	1:35 p.m.	8:54 p.m.	2:39 p.m.	10:31 p.m.
San Diego	1:15 a.m.	6:56 a.m.	2:47 a.m.	7:45 a.m.
Broadway	1:38 p.m.	8:42 p.m.	2:44 p.m.	10:18 p.m.

Online PE.com/weather/

Forecasts and graphics provided by AccuWeather, Inc. ©2018

Air Quality Forecast
Pollution standard index measures the air quality by particles in the air.

NOT AVAILABLE!	
GOOD	0-50 PSI
MODERATE	51-100 PSI
UNHEALTHY FOR SENSITIVE GROUPS	101-150 PSI
UNHEALTHY	151-200 PSI
VERY UNHEALTHY	201-300 PSI
HAZARDOUS	301-500 PSI

Sources: South Coast Air Quality Management District, San Diego County Air Pollution Control District, Clark County, NV Department of Air Quality

ALMANAC

Statistics for Fri. Season begins Oct. 1	Temperatures HI/Lo	Normal HI/Lo	24 hrs. through 4 p.m.	Precipitation Season to date	Normal season total
Beaumont	91/60	96/60	0.00	7.23	19.35
Big Bear Lake	79/50	78/45	0.00	9.45	20.10
Blythe	108/81	106/78	0.00	0.97	3.85
Corona	89/51	94/59	0.00	2.10	13.34
Fontana	92/61	92/60	0.00	5.82	9.13
Hemet	95/62	97/59	0.00	7.18	11.71
Highland	93/61	96/63	0.00	9.74	13.94
Idyllwild	86/51	84/53	0.00	8.37	26.18
Lake Arrowhead	86/66	80/55	0.00	13.91	39.67
Lake Elsinore	99/61	98/62	0.00	3.78	12.44
Menifee	95/55	98/59	0.00	3.62	11.16
Moreno Valley	95/61	95/62	0.00	4.50	9.42
Murrieta	89/58	94/60	0.00	4.29	11.66
Ontario	92/63	93/65	0.00	2.46	15.08
Palm Springs	106/75	105/76	0.00	2.80	5.85
P.S. Tram	74/58	83/53	0.00	9.35	11.71
Redlands	95/60	95/61	0.00	3.98	13.26
Rialto	93/64	96/63	0.00	6.51	13.94
Riverside	92/57	95/61	0.00	2.53	10.34
San Bernardino	97/63	96/63	0.00	6.33	16.01
Temecula	90/57	82/62	0.00	5.89	11.72
Thermal	107/65	105/71	0.00	0.53	3.20
Yucaipa	87/64	91/59	0.00	7.65	9.42

Attachment I

Additional Documentation Attachment to Comment 1-G151

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   Action and Environmental Justice, Center for

8 Biological Diversity, Coalition for Clean Air,

9 Sierra Club, and San Bernardino Valley Audubon Society.

10 [ADDITIONAL COUNSEL ON THE NEXT PAGE]

11

12   IN THE SUPERIOR COURT OF THE STATE OF CALIFORNIA
                 IN AND FOR THE COUNTY OF RIVERSIDE

13

14 ALBERT THOMAS PAULEK; FRIENDS OF THE   Case No: RIC 1510967 [MF]
   NORTHERN SAN JACINTO VALLEY, et al.,

15   Consolidated with
           Petitioners/Plaintiffs,   Case No. RIC 1511118

16   v.   Case No. RIC 1511195

17   Case No. RIC 1511213

18 CITY OF MORENO VALLEY, a municipal   Case No. RIC 1511279
   corporation; MORENO VALLEY COMMUNITY   Case No. RIC 1511327

19 SERVICES DISTRICT, a dependent special district of   Case No. RIC 1511421
   the City of Moreno Valley; and DOES 1-20 inclusive,

20   (California Environmental Quality Act)

21   Respondents/Defendants,

22   Dep't: 10
   HIGHLAND FAIRVIEW; HIGHLAND FAIRVIEW   Judge: Hon. Sharon J. Waters

23 OPERATING COMPANY, a Delaware general
   partnership; HF PROPERTIES, a California general   [PROPOSED] JUDGMENT GRANTING

24 partnership; SUNNYMEAD PROPERTIES, a   PETITIONS FOR A PEREMPTORY

25 Delaware general partnership; 13451 THEODORE   WRIT OF MANDATE
   LLC, a California limited liability company; and DOES

26 21-40 inclusive

27

28   Real Parties in Interest.

29

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31

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25 | Attorneys for Petitioner SoCal Environmental Justice Alliance

26 |

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On January 22, 2018, this Court, Honorable Judge Sharon Waters presiding, heard the above-captioned matter in Department 10. The following counsel appeared at the hearing: Adriano L. Martinez and Oscar Espino-Padron appeared on behalf of petitioners Center for Community Action and Environmental Justice, Center for Biological Diversity, Coalition for Clean Air, Sierra Club, and San Bernardino Valley Audubon Society; Abigail Smith appeared on behalf of petitioner Residents for a Livable Moreno Valley; Susan Nash appeared on behalf of petitioners Albert Thomas Paulek and Friends of the Northern San Jacinto Valley; Richard T. Drury appeared on behalf of petitioner Laborers International Union; and Craig Collins appeared on behalf of petitioner SoCal Environmental Justice Alliance (collectively "Petitioners"). Further, Kenneth Bley appeared on behalf of real parties in interest, HF Properties, Sunnymead Properties, Theodore Properties Partners, HL Property Partners, and 13451 Theodore LLC (collectively "Real Parties In Interest"); and Martin Koczanowicz appeared on behalf of respondents, City of Moreno Valley and Moreno Valley Community Services District (collectively "Respondents").

After hearing argument on the matter, the Court took the case under submission. The Court having reviewed the record of proceedings in this matter, the briefs submitted by all parties, and the oral argument of all counsel, on February 8, 2018, this Court issued a Ruling on Peremptory Writ of Mandate. The Ruling is attached hereto as Exhibit A and incorporated into this judgment by reference. In accordance with this Court's decision,

IT IS ORDERED and ADJUDGED that:

1. Judgment be entered in favor of Petitioners in this proceeding.

2. A peremptory writ of mandate directed to Respondents issue under seal of this Court, ordering Respondents to comply with this Court's February 8, 2018, Ruling and to vacate remaining approvals made in August 2015, as enumerated in the peremptory writ of mandate.

3. Respondents are required to file a return on the writ within 120 days following service of writ. This Court retains jurisdiction for all purposes, including over return to writ and to issue any orders necessary to ensure compliance with this judgment and writ.

4. Petitioners are the prevailing parties and may seek to recover costs incurred in litigating this case and file a motion(s) to recover attorneys' fees.

IT IS SO ORDERED.

Date: June 7, 2018

SUPERIOR COURT JUDGE

1

[PROPOSED] JUDGMENT GRANTING PETITIONS
FOR A PEREMPTORY WRIT OF MANDATE

1 APPROVED AS TO FORM ONLY:

2

3   COX, CASTLE & NICHOLSON LLP

4   Date:

5

6

7   _____
       Kenneth B. Bley
8   Attorney for Real Parties in Interest,
       HF Properties, Sunnymead Properties, Theodore
9   Properties Partners, 13451 Theodore LLC, and
10   HL Property Partners (collectively "Highland Fairview")

11

12

13   OFFICE OF THE CITY ATTORNEY

14   Date:

15

16

17   _____
       Martin D. Koczanowicz
18   Attorney for Respondents/Defendants,
       City of Moreno Valley and Moreno Valley
19   Community Services District

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2
[PROPOSED] JUDGMENT GRANTING PETITIONS
FOR A PEREMPTORY WRIT OF MANDATE

EXHIBIT A

SUPERIOR COURT OF CALIFORNIA, COUNTY OF RIVERSIDE

TITLE: PAULEK, et al. vs. CITY OF MORENO VALLEY	DATE & DEPT: 02/08/18 D10	NUMBER: RIC1510967
COUNSEL: None present	REPORTER: None	F I L E D SUPERIOR COURT OF CALIFORNIA COUNTY OF RIVERSIDE
PROCEEDING: RULING ON PEREMPTORY WRIT OF MANDATE		FEB - 8 2018

L. Hall

SG

FEB 0 9 2018

R

The Court grants the petition, in part, as follows.

I.   Energy Impacts: The FEIR must provide a comparison of feasible, cost-effective renewable energy technologies in the Energy Impacts analysis.

Petitioners argue that the City's response indicating that a comparison of feasible renewable energy technologies is "unnecessary" and its references to mitigation measures addressing other issues (i.e. GHG emissions) was a failure to provide adequate energy conservation analysis. The Court agrees.

"[C]ompressing the analysis of impacts and mitigation measures into a single issue ... disregards the requirements of CEQA." (*Lotus v. Department of Transportation* (2014) 223 Cal.App.4th 645, 656-657.) Additionally, analysis of and mitigation for GHG emissions is not a substitute for energy conservation analysis and mitigation. The City failed to conduct "a good faith reasoned analysis" of cost-effective renewable energy in the FEIR. (*Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal.4th 412, 442.

II.   Biological Impacts: The FEIR should remove all references to and consideration of the 910 acres of SJWA and MSHCP lands as a "buffer zone" or "CDFW Conservation Buffer Area" in the Biological Resources and Habitat Impacts

Sharon Waters, Judge
L. Hall (vis), Clerk
Page 1 of 6 Page(s)

analysis.

Petitioners assert that the use of the term "CDFW Conservation Buffer Area" distorts CEQA analysis of the impacts of the Project on biological resources and habitat on adjacent San Jacinto Wildlife Area (SJWA) and Riverside County Multiple Species Habitat Conservation Plan (MSHCP) lands because it is not actually a buffer area. Petitioners assert that this "false labeling" is repeated numerous times in the EIR, and gives the false impression that the area can be considered mitigation of significant impacts on biological resources and habitat. The Court agrees.

All references to "CDFW Conservation Buffer Area" should be removed and the potential environmental impacts on biological resources and habitats should be re-analyzed without any consideration of said buffer area.

III.   **Noise Impacts: The FEIR must provide an analysis of construction noise over ambient levels; provide adequate analysis on construction noise impacts on nearby homes; address the inadequacy of mitigation measures, which fail to include performance standards or ways to reduce construction noise.**

Analysis of Construction Noise Increases over Ambient Levels

Petitioners assert that in the FEIR, construction noise was only evaluated based on exceedances of Municipal Code levels. Respondents do not establish otherwise. The record does not show that respondents analyzed increases over ambient levels or considered mitigation to address those concerns. This is required.

Construction Noise Impacts on Nearby Homes

Petitioners also argue that the FEIR fails to disclose how severe noise impacts from construction will be on homes that are 50 feet or less from construction. Respondents have not

Sharon Waters, Judge
L. Hall (vis), Clerk
Page 2 of 6 Page(s)

RULING ON PEREMPTORY WRIT OF MANDATE

cited to the record showing where this specific issue was discussed, other than the comment that it is "highly unlikely" that construction noise would occur within 50 feet of a residence because it is "highly unlikely" that a grader or other noise generator will be parked for an hour at that distance. Further analysis in the FEIR is required.

Mitigation Measures

Respondents acknowledge that the FEIR concluded impacts from construction noise would remain significant and unavoidable to residences near the development. They acknowledge that given the potential for construction noise on a 24/7 basis over nine years, mitigation is required.

An EIR is required to describe feasible mitigation measures that effectively minimize the project's significant impacts. (CEQA Guidelines §15126.4(a).) In general, courts defer to an agency's assessment of how effective mitigation measures are. (*Sacramento Old City Association v. City Council* (1991) 229 Cal.App.3d 1011, 1027.) Petitioners take issue with the fact that of three mitigation measures that were proposed (4.12.6.1D; 4.12.6.1E; 4.12.6.1F), only one was implemented, and the other two are merely alternatives. As discussed above, the FEIR failed to analyze construction noise impacts on residences closer than 50-feet from the construction site. As a result, it is not clear how severe the noise impacts would be on those residences. Presuming the impacts are severe, it follows that all feasible mitigation measures should be utilized. Currently, the FEIR only adopted the mitigation measure that prevents grading within 2,800 feet of residences at night. The court finds that further analysis of mitigation measures is required.

Sharon Waters, Judge
L. Hall (vis), Clerk

RULING ON PEREMPTORY WRIT OF MANDATE

Deferred Mitigation for Construction Noise Impacts

Petitioners argue that the EIR improperly deferred mitigation for construction noise impacts. Specifically, they argue that MM 4.12.6.1A and MM 4.12.6.1F only require preparation of a Noise Reduction Compliance Plan and taking measurements, without performance standards or ways to reduce construction noise impacts. In response, Respondents assert that the applicable regulatory standards are the City of Moreno Valley's Municipal Code. Petitioners correctly argue that the subject mitigation measures do not require compliance with the Municipal Code.

IV. **Agricultural Impacts: The FEIR and the resolution certifying the FEIR require clarification as to whether loss of locally important farmlands will have a significant direct or cumulative impact on agriculture and, if significant, the FEIR must either explain how proposed mitigation will reduced the impact or why other mitigation is not feasible.**

The FEIR states that in addition to the FMMP designations, Riverside County has classified certain land in the County as "Locally Important Farmland." This is the category into which the remaining land (2,201 acres) falls. The FEIR provides that the County uses several factors to define "Locally Important Farmland." The FEIR provides that none of those factors support maintaining the remaining land as farmland.

However, as Petitioners note, the City made a finding in its Resolution certifying the FEIR that there would be permanent loss of the 2,201 acres of locally important farmland when the land was converted to nonagricultural uses, and "[t]herefore, the Project will cause significant impacts." Its further finding that implementation of MM 4.2.6.1A "reduces the impact to less than significant level" is without support. MM 4.2.6.1A only applies to the 25 acres of unique

RULING ON PEREMPTORY WRIT OF MANDATE

farmland. Thus, there is no mitigation discussed or adopted for the loss of 2,201 acres of local important farmland. As a result, the FEIR fails on this issue.

V.   Cumulative Impacts: The FEIR should include consideration of recently constructed and proposed large warehouse projects in the summary-of-projections method, and should analyze whether individually insignificant impacts may be cumulatively significant.

Summary of Projections Method

A city may choose to analyze cumulative impacts based on a summary of projections method in an adopted plan, planning document or environmental document, and may use the projections in the plan or document for the for its cumulative impacts analysis. (CEQA Guidelines §15130(b)(1)(B).) The projections may be inadequate if they are outdated or inaccurate. (See *Bakersfield Citizens for Local Control v. City of Bakersfield* (2004) 124 Cal.App.4th 1184, 1217.)

The FEIR explained that there was a cumulative impacts analysis for each environmental topic in the DEIR, and that the City chose the "'summary-of-projections' method rather than the "list" method due to the size, location, and development phasing or horizon of the project, and used the City's General Plan buildout projections, which were available at that time. Petitioners correctly pointed out that using the 2006 Update to the General Plan incorporated outdated information into the FEIR given the increase of large warehouse projects in Moreno Valley since 2006, and amendments to the General Plan. Thus, the FEIR fails as to cumulative impacts by failing to consider recently constructed and proposed warehouse projects.

Sharon Waters, Judge
L. Hall (vis), Clerk
Page 5 of 6 Page(s)

Consideration of How Individually Insignificant Impacts

May Be Cumulatively Significant

Petitioners argue that the FEIR failed to consider how individually insignificant impacts, even if minor impacts, could be cumulatively significant. They cite to the FEIR's response to Comment 5-5-24 analysis on storm water impacts as an example. This Comment describes certain mitigation measures applicable to water quality impacts, and water treatment controls, and then concludes: "It is reasonable to assume that if each individual cumulative project mitigates its own water quality impacts, then the cumulative water impacts ...can be effectively mitigated to less than significant levels." Petitioners point out that there is no analysis of cumulative effects relating to water quality impacts other than analysis of the project itself. Respondents do not cite to specific instances in the record to demonstrate that there is substantial evidence in the FEIR that an adequate cumulative impacts analysis considering incremental effects was done. Accordingly, any new cumulative impacts analysis should also consider and discuss whether any environmentally insignificant impacts may be cumulatively significant, taking into account all relevant past, present, and probable future projects.

The petition is denied as to all remaining arguments.

Petitioners shall prepare and serve a proposed judgment and a proposed peremptory writ of mandate and present it to the Court no later than February 22, 2018. A hearing is set to insure the Court's receipt of these documents. No appearance is required.

Sharon Waters, Judge
L. Hall (vis), Clerk
Page 6 of 6 Page(s)

RULING ON PEREMPTORY WRIT OF MANDATE

SUPERIOR COURT OF CALIFORNIA, COUNTY OF RIVERSIDE
4050 Main Street - 2nd Floor
Riverside, CA 92501
www.riverside.courts.ca.gov

CLERK'S CERTIFICATE OF MAILING

ALBERT THOMAS PAULEK

   vs.   CASE NO. RIC1510967

CITY OF MORENO VALLEY

TO:

I certify that I am currently employed by the Superior Court of
California, County of Riverside and I am not a party to this action
or proceeding. In my capacity, I am familiar with the practices and
procedures used in connection with the mailing of correspondence. Such
correspondence is deposited in the outgoing mail of the Superior
Court. Outgoing mail is delivered to and mailed by the United States
Postal Service, postage prepaid, the same day in the ordinary course
of business. I certify that I served a copy of the attached
Ruling on Peremptory Writ of Mandate on this date, by depositing
said copy as stated above.

Court Executive Officer/Clerk

Dated: 02/08/18   by: _____
                              LETICIA HALL, Deputy Clerk

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Attachment J

Additional Documentation
Attachment to Comment 2-B1

ESA

CALIFORNIA
AIR RESOURCES BOARD

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Re: World Logistics Center Revised Final Environmental Impact Report
(SCH # 2012021045)

Dear Mr. Armijo:

The California Air Resources Board (CARB) has reviewed the World Logistics Center
(WLC or project) Revised Final Environmental Impact Report (RFEIR). CARB
appreciates the opportunity to comment on the RFEIR. Unfortunately, despite revisions,
the RFEIR mischaracterizes (1) the scope of the Cap-and-Trade Program administered
by CARB as they relate to the state's overall greenhouse gas reduction mandates, and
(2) how that program may be relevant to a CEQA analysis. Because the RFEIR's GHG
analysis relies almost entirely on those mischaracterizations for its GHG analysis and
significance determination, it does not meet California Environmental Quality Act
(CEQA) requirements.

The RFEIR's core flaw with regard to greenhouse gases (GHGs) is that it declines fully
to analyze or mitigate emissions from fuel and electricity demand that the project will
cause - the vast majority of the project's emissions - on the ground that CARB's Cap-
and-Trade Program purportedly "covers" the project's emissions for this purpose. In
fact, the Program does not, and was never designed to, adequately address emissions
from local projects and CEQA does not support a novel exemption for such emissions
on this ground. The RFEIR's approach obscures the project's significant potential
contribution to greenhouse gas emissions, and does not properly account for the
combination of federal, state, and local approaches to address climate change that the
crisis demands and the law requires.

We also note that the project still has not been modified to address serious health
concerns from criteria and toxic air pollutants that CARB discussed in prior letters.
Although this letter focuses on GHGs, we continue to be very concerned that local
communities may face undue pollution from this project, if completed, as a result of
inadequate mitigation.

We urge the City of Moreno Valley (City) to address the criteria and toxics issues we
previously raised, and to revise its GHG analysis to accurately account for all GHG
emissions that would result from the project, apply those emissions against the
applicable significance threshold identified in the RFEIR, adopt feasible mitigation to

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ensure those emissions would not cause significant impacts, and recirculate the RFEIR, all as required by CEQA.

I. CARB's Participation in This Project's Review Process

CEQA requires analysis of a project's GHG emissions. Like all CEQA analyses, these disclosures must inform the public and provide appropriate information on mitigation. Planning for greenhouse gas reductions is critical at the project level, as CARB and other state agencies have repeatedly determined. Although various statewide programs address the climate change crisis as well, the CEQA guidelines, and state guidance documents, are clear that achieving the necessary reductions requires project-level focus.

The WLC project proponents have taken a different view in prior versions of the RFEIR and in related litigation, *Paulek v. City of Moreno Valley* (Riverside County Superior Court Case No. RIC 1510967) (*"Paulek"*). That case addresses, among other topics, the initial GHG analysis conducted for the WLC, and in the RFEIR. There, WLC advocates contended that, because some of the suppliers of the fuels and electricity consumed by the project are in the Cap-and-Trade Program CARB administers, the project was not required to analyze or mitigate the significant emissions impacts it would cause. Attorneys for the WLC also argued that because CARB did not specifically object to the project's GHG significance methodology, CARB "apparently had no problem with the EIRs not counting capped emissions against the [WLC] in order to determine the significance of greenhouse gas emissions."[1]

CARB had, in fact, recommended an array of project-based emissions reductions strategies contrary to these claims. CARB takes this opportunity to reiterate those recommendations (prior letters are attached) and to explain why the Cap-and-Trade Program's operations do not allow a departure from CEQA's general rule that project-level impacts be properly addressed.[2]

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[1] Transcript of January 22, 2018 hearing in *Paulek* case, before Hon. Sharon J. Waters, page 18, Lines 3-7.

[2] In both of CARB's comment letters, which we again incorporate by reference, CARB indicated that its recommendations were for the purpose of reducing not only criteria and toxics pollutants, but also for GHG emissions. CARB reviewed the Draft Environmental Impact Report (DEIR) and provided comments to the City of Moreno Valley in a letter dated April 16, 2013. CARB's comment letter expressed concern over the increase in health risk in the immediate area and the significant and unavoidable air quality and greenhouse gas (GHG) related impacts caused by the proposed WLC. To address those concerns, CARB recommended actions to support the development, demonstration, and deployment of zero and near-zero emission technology at the WLC. On June 8, 2015, CARB again provided comments on the Final Environmental Impact Report (FEIR), making similar recommendations. In those comments, CARB noted that the FEIR was unresponsive to the comments CARB provided in its April 16, 2013 letter regarding the DEIR. (See CARB April 16, 2013 letter at 2; CARB June 8, 2015 letter at 1, 3, and 8.)

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II. The RFEIR's Claims About CARB's Cap-and-Trade Regulation Are Incorrect

CEQA translates between high-level policy goals, and individual project choices to better inform the public and support decision-making. The GHG section of the RFEIR takes a novel, and factually unsupported, departure from ordinary CEQA practice by essentially excusing analysis and potential mitigation of GHG emissions when they are indirectly "covered" by a state program. Yet, state programs regularly address at least some aspect of essentially all CEQA impact areas – from state water pollution standards to habitat conservation laws to building codes to endangered species mandates, projects are always considered against a backdrop of state rules. In the ordinary course, the presence of state programs is not taken simply to "cover" the relevant project level impact. On the contrary, CEQA requires project proponents to inquire as to how the project affects environmental resources of statewide concern and to focus on project-level analysis and mitigation. The same rule applies with regard to greenhouse gases. As the California Supreme Court has held, "[l]ocal governments thus bear the primary burden of evaluating a land use project's impacts on greenhouse gas emissions."[3]

Project proponents may refer to statewide analyses and programs, but, as the Court held, ultimately must provide "substantial evidentiary support" explaining how project-level decisions relate to state-level programs to justify findings of significance based on those programs.[4] This is particularly important for new projects, as, per the Court, "a greater degree of reduction may be needed from new projects than from the economy as a whole."[5] And these projects may not simply point to *any* statewide regulations; on the contrary, "[a] significance analysis based on compliance with such statewide regulations ... only goes to impacts within the area governed by the regulations."[6]

In this instance, the Cap-and-Trade Program simply does not cover the project, or require it do anything to mitigate its emissions. As the Court explained, CARB has not "propose[d] statewide regulations of land use planning, but relies instead on local governments." (*Id.* at 230).

CARB has expressed its non-binding views on these matters via the Scoping Plans it is required to prepare under AB 32. The California Supreme Court has recognized the

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CARB was not silent. Moreover, an inference from silence would be improper, in any event. CARB sometimes does not comment on individual projects' GHG or other analyses due to resource constraints and other considerations. Nothing should be inferred from silence on a particular matter.
[3] *Center for Biological Diversity v. Department of Fish & Wildlife* (2015) 62 Cal.4th 204, 230).
[4] *Id.* at 226-230.
[5] *Id.* at 225.
[6] *Id.* at 229.

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Scoping Plan as a valuable source of data for local governments.[7] As each version of CARB's Scoping Plan, including the recent 2017 Scoping Plan Update, explains, on the basis of extensive modeling and analysis, the Cap-and-Trade Program is not intended to address project-level impacts and does not do so. Rather, complementary measures, including land-use planning and project-level analyses, are vital adjuncts to the Cap-and-Trade Program, serve additional purposes to address climate change, and, if neglected, put undue and unanticipated pressure on the Program. The RFEIR's analysis would thus make the problem it purports to analyze even worse; if followed generally, it would result in development patterns and mitigation choices that would lessen the state's ability to address climate change, and would contribute to cumulatively considerable impacts.

Rather than address project-level emissions, the Cap-and-Trade Program covers activities related to electricity generation, natural gas supply, oil and gas extraction, refining, and transportation fuel supply and combustion. The points of regulation are the operators of electricity generating plants, natural gas fuel suppliers, operators of oil and gas extraction facilities, refinery operators, and transportation fuel suppliers at the rack. *See* Tit. 17, Cal. Code Regs., § 95811. The Program also addresses GHG emissions in aggregate at the state level and is not intended nor designed to mitigate greenhouse gas from, or otherwise inform, local land use decisions. Without adequate analysis and mitigation, local jurisdictions may not appropriately consider the greenhouse gas implications of their decisions, conflicting with a core CEQA principle of promoting informed decisionmaking. Rather, demand for fuels and electricity created by poorly-planned local projects creates unnecessary demand on the Cap-and-Trade system, potentially raising prices in the system and making statewide compliance more difficult.

These impacts could be substantial because the transportation sector is the state's largest source of GHG emissions (as well as criteria and toxic pollutant emissions, as we have previously addressed with regard to this project). The recently released California Greenhouse Gas Emission Inventory – 2018 Edition shows that while the state's overall GHG emissions declined from 2015 to 2016, the emissions in the transportation sector increased 2 percent over that same time period.[8] This increase was driven by increases in fuel purchases and use. To effectively achieve the State's GHG target, both production and demand for energy and fuels must be addressed. The

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[7] As the California Supreme Court has held "CEQA requires public agencies...to ensure that such analysis stay in step with evolving scientific knowledge and state regulatory schemes." The Court viewed the Scoping Plan as a particularly useful source of information, given the extensive study and public participation involved in its preparation. (*Cleveland National Forest Foundation v. San Diego Ass'n of Governments* (2017) 3 Cal. 5th 497, 504.) A recent article provides a useful primer on this body of law. (*See* Janill Richards, *The SANDAG Decision: How Lead Agencies Can "Stay in Step" with Law and Science in Addressing the Climate Impacts of Large-Scale Planning and Infrastructure Projects* (2017) 26:2 Environmental Law News 17))

[8] See https://www.arb.ca.gov/cc/inventory/pubs/reports/2000_2016/ghg_inventory_trends_00-16.pdf.

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Legislature recognized this need with regard to electricity when passing SB 350 (Stats. 2015 Ch. 547, De León) to increase the Renewable Portfolio Standard and double energy savings. A similar approach is needed for transportation sector emissions. State-level production side policies such as the Renewable Portfolio Standard, Low Carbon Fuel Standard, and Cap-and-Trade Program cannot alone achieve the State's GHG reduction targets.

In this instance, the RFEIR not only improperly relies on the Cap-and-Trade Regulation; it also fails fully to address consistency with the local measures that *do* more clearly apply. There are a suite of potential emissions reduction strategies identified in the 2017 Scoping Plan aimed at reducing GHG emissions from on-road vehicle travel (e.g., fuel economy standards, technology advancements, SB 375[9]), and the majority of such emissions are not covered in any way by the Cap-and-Trade program.

The City chose not to analyze the project's consistency with the applicable Regional Transportation Plan (RTP), for example, which is subject to GHG emissions reduction targets set by CARB pursuant to SB 375. The City asserted that the RTP does not apply to this project (Table 4.7-11, page 4.7-41 of the RDEIR). We disagree, and suggest that a more appropriate analysis would be whether the project's GHG emissions from on-road transportation would be consistent with, or conflict with, assumptions in the applicable RTP found to comply with SB 375. The city might also refer to the additional nonbinding recommendations offered in CARB's Scoping Plan, though the application of these recommendations, if used, depend on the circumstances of a particular project.

We discuss these points in more detail below.

A. The Cap-and-Trade Regulation Was Never Designed to Achieve All Necessary GHG Reductions From Land Use and Logistics Planning.

The Cap-and-Trade Program was designed from the start as one of a diverse suite of measures, some statewide and some local, to move California toward achieving its GHG targets. To understand the Cap-and-Trade Program's purposes and limitations, the Scoping Plan provides helpful context. The Cap-and-Trade Program covers about 80 percent of all GHG emissions in California.[10] Crucially, just because emissions are "covered" by Cap-and-Trade does not mean all of those emissions from any particular covered entity are mitigated or reduced. It simply means they are included in the cap.

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[9] SB 375 (Steinberg, Statutes of 2008).
[10] Scoping Plan at ES16.

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Thirty-nine percent of California's GHG emissions come from the transportation sector, including logistics-related transportation (like the WLC would involve).[11] Another 19 percent of the state's GHG emissions comes from electricity generation.[12] In addition to Cap-and-Trade, the Scoping Plan includes various other CARB measures, some of which also address transportation and electricity sector emissions, including SB 350, the Low Carbon Fuel Standard, the Mobile Source Strategy, and the Sustainable Freight Action Plan. In addition to the other complementary Scoping Plan measures, the Scoping Plan also clearly states that "[l]ocal government efforts to reduce emissions within their jurisdiction are critical to achieving the State's long-term GHG goals."[13]

The RFEIR's GHG methodology departs from this science, and has enormous implications for other projects across the state: it would amount to a determination that massive logistics centers, sprawling far-flung residential developments, and other types of remote greenfield development need not do anything to address and mitigate their GHG emissions because those emissions are already "taken care of" by the Cap-and-Trade Program. This is simply not true.

B. The Cap-and-Trade Regulation Is Not Intended to Bear the Burden of Achieving the State's Transportation and Energy Sector GHG Goals Alone.

Cap-and-Trade is not intended to achieve California's climate goals on its own. Rather, Cap-and-Trade is designed to motivate behavior by capping and pricing carbon at the regulated entity level – that is, at the industrial facility and fuel/energy supplier level. It does not send a direct price signal to developers of land use or logistics projects. This means, if CEQA and other "checks" on unsustainable development are weakened as the WLC analysis proposes, such development would simply continue without direct cost to the developers, while adding market demand without mitigating the WLC's emissions.

Moreover, if land use development does not account for GHG emissions, more and more of our state's carbon "cap" would be taken up by increasing transportation emissions. Developers do not receive a price signal from Cap-and-Trade, meaning that there will be no clear incentive to alter this pattern, even as it impacts the Cap-and-Trade system. Thus, the prices of compliance instruments under the Cap-and-Trade Program would increase at a higher rate than was contemplated when CARB developed the Cap-and-Trade Program. This would eventually cause a greater cost burden than

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[11] As noted above, transportation-related GHG emissions have increased, from 37% in 2015, to 39% in 2016. See CARB, *California Greenhouse Gas Emissions for 2000 to 2016, Trends of Emissions and Other Indicators* (July 2018) at 1 (available at https://www.arb.ca.gov/cc/inventory/pubs/reports/2000_2016/ghg_inventory_trends_00-16.pdf); see also Scoping Plan at ES1.

[12] Scoping Plan at ES1.

[13] Scoping Plan at 99.; see also page 101.

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anticipated, and it would be borne by all Californians rather than dealt with during the project design phase. Properly-designed local policies, by contrast, may account for GHG emissions of development in a direct way—which furthers the equity objectives of AB 32, complements Cap-and-Trade, and better achieves California's climate goals.

C. There Is No Substantial Evidence Showing that the Project's Transportation and Electricity Related Emissions Would Actually Be Mitigated.

In the face of these substantial difficulties, the RFEIR does not articulate substantial evidence demonstrating a rational connection to the Cap-and-Trade Program – and that connection is badly attenuated, as we have explained. The project developer in this instance is claiming it may do nothing with regard to fuels and electricity, and will rely on reductions other entities may achieve. This is not the tight evidentiary connection required by the Supreme Court and by CEQA, and it is not consistent with the State's GHG reduction programs.

The Final Statement of Reasons (FSOR) prepared when section 15064.4 of the CEQA guidelines, concerning GHGs, was promulgated demonstrates that to properly rely on subsection (b)(3), concerning compliance with statewide programs, a project must demonstrate *with evidence in the record* how the regulations of GHG emissions would actually address the emissions that result from the project. That document states:

> Reading section 15064.4 together with 15064(h)(3), however, to demonstrate consistency with an existing GHG reduction plan, a lead agency would have to show that the plan actually addresses the emissions that would result from the project. *Thus, for example, a subdivision project could not demonstrate consistency with the ARB's Early Action Measures because those measures do not address emissions resulting from a typical housing subdivision.* (ARB, Expanded List of Early Action Measures to Reduce Greenhouse Gas Emissions in California Recommended for Board Consideration, October 2007; see also State CEQA Guidelines, §§ 15063(d)(3) (initial study must be supported with information to support conclusions), 15128 (determination in an EIR that an impact is less than significant must be briefly explained).)[14]

Here, there is no evidence in the RFEIR regarding who is responsible for complying with Cap-and-Trade for all the GHG emissions at issue in this case – and it certainly is not the project itself. The project is a logistics facility, with trucks involved in interstate commerce, and it is not covered by that Program. Indeed, there is no basis for the

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[14] See Natural Resources Agency, Final Statement of Reasons for Amendments to the State CEQA Guidelines
Addressing Analysis and Mitigation of Greenhouse Gas Emissions Pursuant to SB97 (December 2009) at 27 (emphasis added).

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RFEIR's conclusion that the fuel for all of the vehicles serving the project would be covered under the Cap-and-Trade regulation, since it is not clear that all of these vehicles would even purchase their fuel in California.

D. The Project Fails to Account for the Duration of the Project Compared to the Duration of the Cap-and-Trade Program.

The RFEIR states the project's buildout year is 2035,[15] yet the GHG analysis seems to stop after 2035. This raises multiple problems for the RFEIR analysis.

First, it is unclear why the analysis stops at buildout, when GHG emissions (and other environmental impacts) would continue into the indefinite future -- at their highest levels -- once full operations begin. Without further analysis throughout the project's anticipated life (which does not appear to be stated in the RFEIR but, presumably, would be at least 30 years after buildout), the analysis is incomplete and dramatically understates the project's GHG emissions. This also means the project would likely place a much higher burden on the Cap-and-Trade program than disclosed in the RFEIR -- a burden that, as described above, is pushed onto all Californians instead of the project developer as a result of the project's failure to mitigate the vast majority of its GHG emissions.

Second, the RFEIR fails to account for, or even consider, the fact that the current Cap-and-Trade regulation extends only to 2030 -- which is five years *before* the project's full buildout is achieved. This means that the RFEIR has no plan whatsoever to account for its GHG emissions once the project is fully built out. The RFEIR also does not address the inconsistency between the project's GHG emissions and Executive Order S-03-05, which, among other things, establishes a state GHG reduction target to reduce GHG emissions to 80 percent below 1990 levels by 2050.[16] The California Supreme Court has emphasized the importance of California's GHG targets in selecting appropriate CEQA thresholds.[17] Despite these considerations, there is no substantial evidence in the record to ensure that *any* of the project's post-buildout operational emissions are mitigated by the Cap-and-Trade program.

E. The Project Fails to Include a Backstop In Case Cap-and-Trade is Altered.

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[15] Revised FEIR at 3-1.

[16] See Governor's Executive Order No. S-03-05 (June 1, 2005) (available at http://static1.squarespace.com/static/549885d4e4b0ba0bff5dc695/t/54d7f1e0e4b0f0798cee3010/142343 8304744/California+Executive+Order+S-3-05+(June+2005).pdf); see also Governor's Executive Order No. B-30-15 (April 29, 2015) (available at https://www.gov.ca.gov/2015/04/29/news18938/).

[17] See *Cleveland Nat'l Forest Found. v. San Diego Assn. of Governments* (2017) 3 Cal.5th 497 at 516-519.

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In addition to its other evidentiary flaws, the RFEIR does not analyze how the analysis would change, and how the project's significant GHG impacts would be mitigated, if Cap-and-Trade were revised in a way that affects the state's GHG levels. In other words, the RFEIR's approach puts an almost complete reliance on the Cap-and-Trade Program in ways that, if adopted generally, would considerably affect the Program, and then fails to consider the possibility that the Program might change even as the Project continues to exist. This could include, for example, a scenario in which:

- The Cap-and-Trade program ceased to exist, or
- If the scope of the program were limited to exclude fuels and electricity, or
- If the Legislature or other factors required the program to be amended in a way that allows a higher cap.

Rather than anticipating any of these or other potential contingencies and building in an appropriate backstop to ensure the project's GHG emissions are mitigated below significance, the RFEIR instead blindly relies on the current Cap-and-Trade Program, with no further commitments or requirements. As a result, the RFEIR fails to provide substantial evidence supporting its conclusion that the project will result in less than significant GHG emissions, while forwarding an analysis that, if accepted, would make the state significantly less able to address climate change impacts resulting from its built infrastructure.

III. The RFEIR is Inconsistent with CEQA Requirements.

The RFEIR's multiple errors with regard to the Cap-and-Trade Program render it contrary with CEQA law. The RFEIR misapplies the key CEQA Guideline, section 15064.4(b), which provides in pertinent part:[18]

(b) A lead agency should consider the following factors, *among others,* when assessing the significance of impacts from greenhouse gas emissions on the environment:

1. The extent to which the project may increase or reduce greenhouse gas emissions as compared to the existing environmental setting;
2. Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project.
3. The extent to which *the project complies* with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions. Such requirements must be adopted by the relevant public agency through a public review process and

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[18] CEQA Guidelines § 15064.4(b) (emphasis added).

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> must reduce or mitigate the project's incremental contribution of greenhouse gas emissions. *If there is substantial evidence that the possible effects of a particular project are still cumulatively considerable notwithstanding compliance with the adopted regulations or requirements, an EIR must be prepared for the project.*

Thus, the CEQA Guidelines focus on project-level compliance and project-level impacts. State programs are available for consideration, but they are not held out as a panacea, for GHGs any more than for any other resource area.

Yet, the RFEIR relies upon subsection (b)(3) of this provision to claim that emissions which are indirectly included under the "cap" created by the Cap-and-Trade Program (referred to in the RFEIR as "capped emissions") need not be analyzed and mitigated under CEQA. This approach would excuse all of the WLC's transportation and electricity related emissions, leaving the project only "on the hook" for analyzing and mitigating a tiny fraction of its emissions. The following sections explain why this approach is legally and factually flawed.

A. Subsection (b)(3) Itself Does Not Allow The Approach Used in the Revised Final EIR.

As noted above, subsection (b)(3) of CEQA Guidelines section 15064.4 can be used as a factor to assess GHG significance when "*the project complies* with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions...." Here, the RFEIR concedes that the project is not subject to the Cap-and-Trade Regulation.[19] This in itself should be sufficient to demonstrate that subsection (b)(3) is inapplicable to the project, as "the project" does not "comply" with Cap-and-Trade at all.

B. The RFEIR's Hybrid Approach Used To Determine Significance Is Not Allowed.

In addition to improperly relying on subsection (b)(3), as described above, the RFEIR improperly attempts to create a "hybrid" significance scheme based on selectively combining subsection (b)(3) with the South Coast Air Quality Management District's (SCAQMD) bright-line threshold. As explained in the RFEIR, a potentially appropriate significance threshold in this case is the SCAQMD's 10,000 metric ton threshold.[20] The problem here is that the RFEIR does not compare the project's GHG emissions against this 10,000 metric ton threshold, and then mitigate those emissions to below that threshold to the extent feasible. Rather, the RFEIR simply subtracts from its emissions quantifications any GHG emissions that it deems to be "capped," and compares only the net "non-capped" emissions against the bright-line threshold.

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[19] See page 4.7-4.
[20] RFEIR at 4.7-21.

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This approach is unsupported in law. Regardless of which threshold applies, CEQA requires lead agencies to "make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate or estimate the amount of greenhouse gas emissions resulting from a project."[21] CEQA then provides that the lead agency must consider "whether *the project emissions* exceed a threshold of significance the lead agency determines applies to the project."[22] Thus, even if subsection (b)(3) properly applied here (which it does not, as explained above), nothing in the CEQA Guidelines allows this hybrid approach of cherry-picking what emissions are applied to an otherwise-applicable bright-line threshold. The City has not even attempted to satisfy its burden of providing such substantial evidence. As noted elsewhere in this letter, Cap-and-Trade does not result in ton-for-ton mitigation of each metric ton covered by the program. Rather, it is a declining market-wide cap designed to achieve certain statewide goals -- which, as explained elsewhere in this document, is not designed to mitigate all GHG emissions from land use and logistics facilities.

Because the REFIR fails to properly apply the vast majority of the project's GHG emissions to the applicable bright-line significance threshold, it also fails to mitigate those emissions, as it simply dismisses them as "less than significant". If the full scope of the GHG emissions attributable to the project were compared to the applicable bright-line threshold, the mitigated emissions would still be substantially over the threshold. CEQA requires that the project's significant GHG emissions must be mitigated to the extent feasible. Additional mitigation measures are available to further reduce the project's GHG emissions that were not considered due to the inappropriate exclusion of the majority of project-generated emissions from the analysis.

C. Reliance Upon *AIR v. Kern County* Is Improper.

While the RFEIR provides little support for the GHG significance approach it takes, the briefing for *Paulek* further explains the reasoning behind the project's GHG analysis. In those briefs, attorneys for the developer claim that an unrelated appellate ruling, the *AIR v. Kern County* decision[23] is relevant. That decision concerned CEQA analyses for sources actually covered by the Cap-and-Trade Regulation, but the claim is that it somehow applies not only to GHGs from projects that are directly subject to the Cap-and-Trade Regulation, but also to all transportation and electricity related GHG

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[21] CEQA Guidelines § 15064.4(a).

[22] CEQA Guidelines § 15064.4(b)(2).

[23] *Association of Irritated Residents v. Kern County Board of Supervisors* (2017) 17 Cal. App. 5th 708. In CARB's view this case was wrongly decided as to the Cap-and-Trade issue, and it is certainly not apposite in this very different context.

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emissions, the logic being that those emissions are technically included in the statewide "cap" on emissions. This is incorrect factually, for all the reasons discussed above.

It is also not a controlling case legally. The holding in *AIR v. Kern County* addressed whether it "is appropriate for a lead agency to conclude a *project compliance* [sic] *with the cap-and-trade program* provides a sufficient basis for determining the impact of the project's greenhouse gas emissions will be less than significant."[24] The project at issue in that case was a refinery that was directly subject to the Cap-and-Trade Regulation. The court did not address the broader question of whether *all* GHG emissions from resources that are indirectly covered by Cap-and-Trade, at some undefined upstream point, may be cast aside as less than significant. Here, as noted above, the WLC is *not* subject to the Cap-and-Trade regulation. It therefore does not "comply" with the Cap-and-Trade program, and is distinguishable from the project at issue in *AIR v. Kern County*.

C. Reliance Upon Obscure 2013 Negative Declarations and a Policy Document from Another District Is Similarly Uncompelling.

The RFEIR itself also attempts to justify excluding "capped emissions" from its significance analysis by referencing two seemingly cherry-picked 2013 mitigated negative declarations,[25] and one 2014 guidance document from the San Joaquin Valley Air Pollution Control District (SJVAPCD) titled Policy APR-2025. The RFEIR does not explain why it chose to follow the methodology allegedly used in two obscure mitigated negative declarations and in a 2014 policy document from an air district in a different air basin, rather than following traditional CEQA GHG analysis and mitigation principles. Furthermore, the primary SJVAPCD guidance documents regarding analyzing and mitigating GHG emissions under CEQA make no mention of Policy APR-2025, including the guidance documents relied upon in the *AIR v. Kern County* decision.[26]

To the extent the RFEIR is considering what other air districts have done, it is worth noting that the California Air Pollution Control Officers' Association (CAPCOA) has considered a range of potential CEQA significance thresholds, none of which summarily

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[24] *AIR v. Kern County* at 743 (emphasis added).
[25] The Revised FEIR only cryptically references these MNDs, without citations or links to the documents, and without any other information explaining the basis for their CEQA significance approach. The RFEIR's failure to include or adequately reference these mitigated negative declarations hampers the public's ability to review and comment on the RFEIR.
[26] See, e.g., *AIR v. Kern County* at 743-744; see also http://www.valleyair.org/transportation/GAMAQI_3-19-15.pdf; http://www.valleyair.org/transportation/GAMAQI_3-19-15.pdf; and http://www.valleyair.org/Programs/CCAP/12-17-09/3%20CCAP%20-%20FINAL%20LU%20Guidance%20-%20Dec%2017%202009.pdf.

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exclude emissions that are indirectly included within the Cap-and-Trade program.[27] While that document was generated in 2008, it makes multiple references to the Cap-and-Trade program, and does not endorse simply subtracting all so-called "capped emissions" from GHG analyses.

D. Even If CEQA Guideline 15064.4(b)(3) Applied Here, The RFEIR Ignores Other Requirements in the CEQA Guidelines.

The sections above provide in-depth analysis regarding why subsection (b)(3) of CEQA Guideline 15064.4 does not allow this project to simply disregard the vast majority of its GHG emissions. Even if that subsection did apply, there are other deficiencies in the RFEIR's GHG analysis that must be addressed.

First, the CEQA Guidelines make clear that an agency cannot focus solely on a single significance consideration while ignoring other evidence or indicators showing potentially significant impacts. For example:

- Section 15064.4(b) states that "[a] lead agency should consider the following factors, *among others*, when assessing the significance of impacts from greenhouse gas emissions on the environment."
- Section 15064.4(b)(3) provides in pertinent part: "If there is substantial evidence that the possible effects of a particular project are still cumulatively considerable notwithstanding compliance with the adopted regulations or requirements, an EIR must be prepared for the project."
- Section 15064(h)(3) provides: "If there is substantial evidence that the possible effects of a particular project are still cumulatively considerable notwithstanding that the project complies with the specified plan or mitigation program addressing the cumulative problem, an EIR must be prepared for the project.'"

As discussed in depth above, there is evidence in this record showing significant GHG impacts that were not analyzed or mitigated in the RFEIR. CEQA does not allow these impacts to be overlooked, even if the lead agency believes the project's GHG emissions would be less than significant under one particular (and here, improper) significance metric.

IV. Criteria Pollutants and Toxic Emissions Must Still Be Considered

In its 2013 and 2015 comment letters, CARB noted its substantial concerns regarding the project's air pollutant and toxics emissions, and suggested several feasible means of reducing the significant impacts from those emissions. These emissions raise

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[27] See CAPCOA, CEQA & Climate Change (January 2008). Available at http://www.capcoa.org/wp-content/uploads/downloads/2010/05/CAPCOA-White-Paper.pdf.

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substantial local exposure and environmental justice concerns, as Moreno Valley already suffers from very substantial air pollution exposures. These exposures would likely be worsened without appropriate mitigation measures.[28] CARB incorporates the comments from those letters into this letter by reference, and strongly recommends that the RFEIR be revised to incorporate all mitigation recommended in its 2013 and 2015 comment letters.

V. Conclusion

While the WLC has enormous GHG implications in itself, the attention this project has received, and the recent legal developments in the emerging *AIR v. Kern County* and *Paulek* line of cases, demonstrate that the City's decisions in the RFEIR have implications beyond the WLC project as well. The City should revise its GHG analysis to accurately account for all GHG emissions that would result from the project, apply those emissions against the applicable significance threshold identified in the RFEIR, and adopt feasible mitigation to ensure those emissions would not cause significant impacts, as required by CEQA.

Sincerely,

Richard W. Corey
Executive Officer

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[28] On these issues of acute local exposure, especially to roadway emissions, and the importance of fully addressing these sources of risk, see Ann Carlson, *The Clean Air Act's Blind Spot: Microclimates and Hotspot Pollution* (2018) 65 UCLA L. Rev. 1036.

Air Resources Board

Mary D. Nichols, Chairman
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Sacramento, California 95812 • www.arb.ca.gov

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CITY OF MORENO VALLEY
Planning Division

April 16, 2013

Mr. John Terell
Planning Official
Community and Economic Development Department
Planning Division
14177 Frederick Street
Post Office Box 88005
Moreno Valley, California 92552

Dear Mr. Terell:

The California Air Resources Board (ARB) is providing comments regarding the Draft
Environmental Impact Report (EIR) for the proposed World Logistics Center (Center) a
3,918 acre project which includes 2,710 acres for logistics warehousing to be developed
by the project applicant Highland Fairview. This new facility provides an opportunity to
create a state-of-the-art-facility that promotes the use of the cleanest technologies
available during both the construction phase and full project build-out.

The Center includes a number of features that attempt to mitigate the impacts of the   ⎤ 1
increase in diesel truck traffic in the region as well as emissions from project
construction. These features include designated truck routes to direct trucks away from
a nearby residential community, design principles that include special edge treatments
to provide a buffer between the Center and an existing residential community,
sustainability principles that encourage active transportation, and the requirement for all
heavy-duty trucks entering the facility to meet or exceed 2010 emission standards or be
powered by an alternative fuel. Nonetheless, the long-term operation of diesel trucks   ⎦
will have a significant impact in the region. Given the magnitude and scope of the   ⎤ 2
Center, these features need to be expanded to include emerging zero-emission
technology for the equipment that will serve the facility.   ⎦

At full project build-out, emissions from diesel trucks will be the largest contributor to ⎤ 3
cancer risk from the Center. ARB staff believes that technology capable of
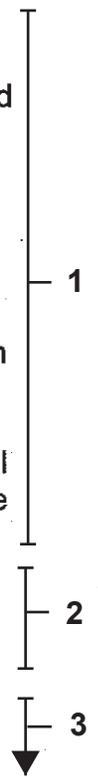
The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption.
For a list of simple ways you can reduce demand and cut your energy costs, see our website: http://www.arb.ca.gov.

California Environmental Protection Agency

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zero-emissions will be available for additional applications, including trucks, in the early
years of full project build-out. The final project conditions should support development
of this technology and provide for its use to better protect the health of nearby residents
from the harmful effects of fine particle pollution (including diesel particulate matter),
ensure the emission reductions required to attain air quality standards for all pollutants,
and reduce greenhouse gases.

| 3

Background

The proposed Center project area covers 3,918 acres in eastern Moreno Valley (near
Highway 60 and roughly 75 miles east of the Ports of Los Angeles and Long Beach).
The entire project area is covered by a City of Moreno Valley General Plan Amendment
that proposes to redesignate 2,635 acres for logistics development, with the remaining
area designated for use as public utility, open space, or utility extensions. Currently, the
Center project area is designated as a mix of residential, commercial, business park,
and open space land uses.

Within the project area, 2,710 acres are included in a proposed World Logistics Center
Specific Plan (Specific Plan). The Specific Plan allows for up to 41.4 million square feet
of high-cube logistics (logistics development) including 20,000 square feet of land for
logistics support for vehicle fueling, as well as 200,000 square feet of warehouse and
related uses (light logistics). The project area will be built-to-suit under the
requirements of the Specific Plan, individual development permits, and mitigation
required as a result of the EIR. It is proposed that the Center be built in two phases with
development build-out years of 2017 for Phase 1 and 2022 for Phase 2. At full project
build-out it is expected that on average about 58,300 non-diesel vehicles and 12,700
heavy duty diesel vehicles will operate at the facility daily.

| 4

Existing land use surrounding the proposed Center is the Highland Fairview Corporate
Park and State Route 60 to the north; San Jacinto Wildlife Area and Lake Perris State
Recreation Area to the south; vacant hillsides and scattered Residential to the east; and
Suburban Residential Neighborhood to the west.

The draft EIR presents several analyses of the Center's potential air quality impacts at
both a regional and local level. The document presents two scenarios: 1) the "No
Project" scenario in which assumes full build-out of the City of Moreno Valley General
Plan in 2035 except for the project site, and 2) the "With Project" scenario which
assumes the project were built-out in accordance with its proposed phased build-out
schedule and then added to the No Project scenario. Both of the scenarios reflect the
benefits of adopted ARB and federal regulations that are reducing emissions from the
transportation sector over time. The draft EIR also assesses the maximum individual

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cancer risk (risk) to residents in the neighboring residential community from Center emissions. When risk from the two scenarios is compared, there is an estimated net increase in risk from the Center (with proposed mitigation) of 20.9 chances in a million.

— 5

The draft EIR also presented year-by-year estimated greenhouse gas emissions from Center operations in 2014 through 2022. Even after all feasible mitigation is implemented, Center-related greenhouse gas emissions will exceed the South Coast Air Quality Management District significance threshold of 10,000 million metric tons of carbon dioxide equivalents per year by a wide margin. At full project build out in 2022 (including all mitigation and project design features), total projected greenhouse gas emissions exceed 665,000 million metric tons of carbon dioxide equivalents per year. Impacts related to greenhouse gas emissions and climate change will be significant and unavoidable.

— 6

ARB staff concludes that the proposed Center would increase the health risk in the immediate area and the project should utilize all existing and emerging zero-emission technology and implement land use decisions that minimize diesel exposure to the neighboring community.

— 7

Recommendations

The majority of the localized cancer risk for the Center is attributable to the increase in diesel PM from the construction and long-term operation of the facility. The draft EIR estimates a net increase in diesel PM from the Center's total operational emissions of 24 pounds per day in 2017 and 54 pounds per day in 2022 (total operations include truck yards, local roadways internal to the project site, local surface streets, and main freeway segments in the project area). Consequently, ARB staff recommends actions to support the development, demonstration, and deployment of zero- and near zero-emission technology to reduce localized health risk and regional emissions. We believe that use of these technologies is feasible within the build-out years of the Center, consistent with the California Environmental Quality Act definition:

— 8

"Feasible" means capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors. (California Code of Regulations, title 14, section 15364)

The Specific Plan should be modified to require the use of the cleanest technologies within the Center as a project and lease condition accordingly:

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1. From the onset, require that all medium-heavy and heavy-heavy duty trucks, including any alternative fuel vehicles, meet or exceed the 2010 emission standards. As it becomes available, require that trucks traveling between the Center and any ports or railyards within 100 miles use zero/near zero technology.

2. Require, to the greatest extent possible, on-site service vehicles and equipment use zero emission technology and, if zero-emission technology is unavailable, that all vehicles and equipment meet the cleanest applicable emission standard.

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3. Require, when available, the use of zero-emission property maintenance equipment.
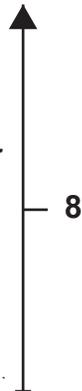
In addition, proposed mitigation measure 4.3.6.2A (construction equipment exhaust mitigation) should require the use of electric construction tools, when available and feasible, rather than just provide electric hookups. In addition, require all construction fleets be in compliance and monitor compliance with current air quality regulations for off-road equipment. Proposed mitigation measure 4.3.6.3B (localized construction and operations emission mitigation) should require all tenants be in compliance and monitor compliance with all current air quality regulations for on-road trucks including ARB's Heavy-Duty Greenhouse Gas Regulation and Truck and Bus Regulation. ARB is available to provide assistance in implementing this recommendation.

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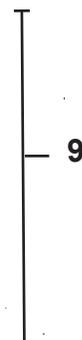
ARB recommends these additional mitigation measures to further minimize impact to the surrounding community:

1. The developer, Highland Fairview, or the City of Moreno Valley provide incentives for tenants to encourage the use of 8 rnative modes of commuting by their employees including, but not limited to, active transportation, public transportation, car pool, and the use of zero-emission vehicles. These same methods of transportation should be strongly encouraged or required for movement within the Center area.

10

2. Shift the proposed development along the west side of the project area to focus on light logistics or other uses to ensure that any operations of diesel trucks or equipment are at least 1000 feet away from residential occupied or zoned property or other sensitive receptor.

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3. Minimize all traffic, beyond just heavy-duty truck traffic, by limiting the use of the "D" Street entrance to only local residents.

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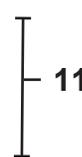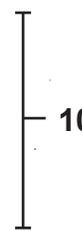
Mr. John Terell

Page 5

4. Increase the required distance from any on-site fueling stations to residential occupied or zoned property or other sensitive receptor from 250 feet to 1,000 feet.

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Closing

ARB staff appreciated the opportunity to comment on the draft EIR. Given the scale of the facility and the risk associated with the increase in diesel PM from the Project, it is critical that the draft EIR and Specific Plan incorporate the use of advanced technologies as they become available. We are pleased to provide assistance for successful implementation and deployment of a state-of-the-art facility that serves the region's distribution and air quality needs, while protecting public health. If you have questions, please call me at (916) 324-0062 or contact Mr. Jack Kitowski, Assistant Division Chief, Stationary Source Division at (916) 445-6102 or jkitowsk@arb.ca.gov.

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Sincerely,
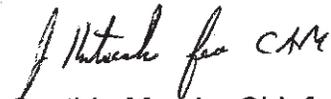
Cynthia Marvin, Chief
Stationary Source Division

cc: Jack Kitowski
        Assistant Division Chief
        Stationary Source Division

        State Clearinghouse #2012021045

Air Resources Board

Mary D. Nichols, Chairman
1001 I Street • P.O. Box 2815
Sacramento, California 95812 • www.arb.ca.gov

Matthew Rodriquez
*Secretary for
Environmental Protection*

Edmund G. Brown Jr.
Governor

June 8, 2015

Mr. Mark Gross
City of Moreno Valley
Community Development Department
14177 Frederick Street
PO Box 88005
Moreno Valley, California 92552

Re: World Logistics Center Final Environmental Impact Report
        SCH# 2012021045

Dear Mr. Gross:

The Air Resources Board (ARB) has received and reviewed the World Logistics Center (WLC or project) Final Environmental Impact Report (FEIR). This project provides an opportunity to create a state-of-the-art facility that promotes the use of the cleanest technologies available and maximizes efficiency improvements during both the construction and operational phases at full build out in 2030.

ARB reviewed the Draft Environmental Impact Report (DEIR) and provided comments to the City of Moreno Valley (City) in a letter dated April 16, 2013. ARB's comment letter expressed concern over the increase in health risk in the immediate area and the significant and unavoidable air quality and greenhouse gas related impacts caused by the proposed WLC. To address those concerns, ARB recommended actions to support the development, demonstration, and deployment of zero and near-zero emission technology at the WLC.

Unfortunately, ARB finds the FEIR to be legally inadequate and unresponsive to the comments ARB provided in its April 16, 2013 letter regarding the DEIR. ARB appreciates the opportunity to comment on the FEIR, as we have significant concerns with the analysis and mitigation currently outlined in the document. We urge the City to revise and recirculate the EIR, to reflect needed changes in mitigation and to bolster the analysis of potential health risks posed by the project, as required by California Environmental Quality Act (CEQA).

The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption.
For a list of simple ways you can reduce demand and cut your energy costs, see our website: http://www.arb.ca.gov.

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June 8, 2015
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In addition, we are aware of the possibility that the City may opt to move the WLC decision to a ballot measure. Given the potential emissions impacts and increase in health risk associated with project construction and operation, we strongly urge CEQA compliance by the City, irrespective of whether or not this project becomes a ballot measure.

CEQA Background Regarding Responses to Comments and Need for EIR Recirculation

When a significant environmental issue is raised in comments that object to the draft EIR's analysis, the response must be detailed and must provide a reasoned, good faith analysis. (14 CCR § 15088(c).) The responses to comments on a draft EIR must state reasons for rejecting suggestions and objections concerning significant environmental issues. (*City of Maywood v. Los Angeles Unified Sch. Dist.* (2012) 208 Cal.App.4th 362, 391.) The need for a reasoned, factual response is particularly acute when critical comments have been made by other agencies or by experts. (See *Berkeley Keep Jets Over the Bay Comm. v. Board of Port Comm'rs* (2001) 91 Cal.App.4th 1344, 1367,1371.)

If significant new information[1] is added to an Environmental Impact Report (EIR)[2] after notice of public review has occurred, but before final certification of the EIR, the lead agency must issue a new notice and recirculate the EIR for comments and consultation. (Pub. Res. Code § 21092.1; 14 CCR § 15088.5.) "Significant new information" triggering the need for EIR recirculation includes information showing that (1) a new or more severe environmental impact would result from the project, (2) a feasible project alternative or mitigation measure considerably different from others previously analyzed would clearly lessen the significant environmental impacts of a project but the project proponent declines to adopt it, or (3) the draft EIR was so fundamentally and basically inadequate and conclusory in nature that meaningful public review and comment were precluded. (14 CCR § 15088.5(a)(1)-(4).)

A decision not to recirculate an EIR must be supported by substantial evidence in the administrative record. (14 CCR § 15088.5(e).)

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[1] "Information" triggering recirculation can include additional data or other information. (14 CCR § 15088.5(a).)

[2] Note that even if new information is not "added to an EIR," it can still trigger the need for recirculation. (See, e.g., *Save Our Peninsula Comm. v. Monterey County Bd. of Supervisors* (2001) 87 Cal.App.4th 99, 131 (information on important new mitigation measure, added to record after EIR was completed, should have been included in EIR and circulated for public review and comment given questions raised about its effectiveness and potential impacts).

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The Response to Comments Fails to Adequately Address ARB's Comments And Does Not Adopt All Feasible Mitigation Measures

In its previous comment letter, ARB recommended "actions to support the development, demonstration, and deployment of zero and near-zero emission technology to reduce localized health risk and regional emissions. We believe that use of these technologies is feasible within the build-out years of the Center." However, the FEIR discussion (in particular, responses to comment B-5-7 and B-5-8 and Master Response 3) regarding zero emission and hybrid electric trucks, vehicles, and equipment does not evaluate the current feasibility of hybrid technologies, or consider the potential for other zero and near-zero emission technologies to be feasible and commercially available, both at the present date and by project build-out in 2030. These technologies are feasible measures that would lessen the WLC's impacts on criteria and greenhouse gas emissions, as well as air toxics and health risk.[3]

Because these mitigation measures have not been fully adopted for the proposed project, the EIR must be recirculated to incorporate the feasible mitigation measures, or to make a supportable finding that the measures are infeasible. (See 14 CCR § 15088.5(a)(3).)

The information contained in the FEIR regarding feasibility and availability of these technologies relies largely on information from the Port of Long Beach and Los Angeles, most of which is at least two years old, and is but one source of information regarding the feasibility of zero or near-zero emissions vehicles. Today, zero and near-zero emission technologies are commercially available in vehicle and equipment applications typically used at warehouse and distribution centers. Examples include battery electric and fuel cell electric forklifts, battery electric and hybrid electric medium-duty trucks, and plug-in hybrid electric transportation refrigeration units. For more information, please see ARB's Heavy-Duty Technology and Fuels Assessment: Overview, found at http://www.arb.ca.gov/msprog/tech/techreport/ta_overview_v_4_3_2015_final_pdf.pdf.

However, the FEIR discussion (in particular, responses to comment B-5-7 and B-5-8 and Master Response 3) regarding zero emission and hybrid electric trucks, vehicles, and equipment does not adequately evaluate the current feasibility of hybrid technologies, or consider the potential for other zero and near-zero emission technologies to be feasible and commercially available, both at the present date and by project build-out.

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[3] For the purposes of CEQA, "feasible" means capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors. (California Code of Regulations, title 14, section 15364)

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The response to comment B-5-7 states that "the project will support a variety of future users which are unknown at this time so it is not possible to specify or require future users to have zero emission or alternative fuel fleets since most logistics companies use independent contractors and truck drivers rather than maintain their own fleets." This response is contradictory and insufficient to show that the proposed mitigation measures are infeasible. This is particularly true given the FEIR's inclusion of several requirements that are applicable to all future tenants; specifically, that all medium and heavy-duty diesel trucks entering logistics sites shall meet or exceed 2010 engine emission standards and all yard trucks shall be powered by electricity, natural gas, propane, or an equivalent non-diesel fuel. If the mitigation measures can restrict access to the facility by truck engine year, there is no reason the mitigation measures cannot similarly restrict access by allowable technologies.

Furthermore, the response to comments rejected the proposed measure of requiring that trucks travelling between the project and any ports or rail yards within 100 miles use zero or near zero emission technology. The reasons for rejecting this measure are also unclear. The response to comments notes that "the Port of Los Angeles is testing various types of zero-emission technology solutions for heavy-duty vehicles," which the response to comments explains have a "range of travel between 100 miles and 200 miles per charge." (WLC Response to Comments at 234.) Therefore, it remains unclear why a measure requiring zero or near zero emission trucks for trips within 100 miles of the project would not be feasible, particularly by project build out in 2030.

With regard to onsite service vehicles and equipment, the response to comment B-5-8 further notes that the only included mitigation measure incorporated into the FEIR is prohibiting the use of diesel-powered onsite vehicles and equipment. (WLC Response to Comments at 185.) Again, the reasons for not including mitigation measures for these onsite vehicles remain unclear, since the response to comments does not clearly address why these types of vehicles and equipment are not available in zero or near-zero emission configurations.

The EIR should therefore be revised and recirculated to do the following:

- Fully evaluate mitigation measures for zero and near-zero emission technologies that are commercially available over the course of project development and by full build-out in 2030.
- Require all feasible mitigation measures and support the development, demonstration, and deployment of zero and near-zero emission technologies including requiring zero emission (such as battery electric or fuel cell electric) forklifts and battery electric and hybrid electric medium-duty trucks. These technologies are commercially available today. Additional advancements,

Mr. Mark Gross
June 8, 2015
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especially for on-road trucks, are expected in the next three to five years; well before project build-out in 2030.

Recirculation Is Required Due To Fundamental Inadequacies in the Project's Health Risk Assessment

Several elements of the health risk assessment section of the FEIR are flawed and inadequate, and require revision and recirculation. As noted above, one of the circumstances triggering the need for EIR recirculation is the addition of information showing that the EIR was fundamentally inadequate and conclusory in nature that meaningful public review and comment were precluded. (14 CCR § 15088.5(a).)

In this case, this recirculation "trigger" is present. The FEIR analysis has been revised since the draft EIR was released to include a new study regarding health impacts from diesel engines, specifically, the Advanced Collaborative Emissions Study (ACES). The FEIR repeatedly references that the ACES study concludes that the "application of new emissions control technology to diesel engines have virtually eliminated the health impacts of diesel exhaust." First, the use of only one study as the basis for this analysis is not sufficient for the purpose of providing a comprehensive analysis of health risk from project construction and operations. The ACES study is only one of many scientific studies related to health risk and emissions, and therefore, cannot serve as substantial evidence regarding the project impact to human health. In fact, there are many other studies that conclude that diesel particulate matter (PM) is a health hazard. For example, the International Agency for Research on Cancer evaluated the scientific literature as a whole and concluded in 2012 that diesel PM is carcinogenic to humans (class 1). Second, and more importantly, the ACES study's methodology and findings render it inadequate for inclusion in an environmental document, and cannot serve as substantial evidence supporting a finding that the project will not result in significant cancer risk impacts.[4] Therefore, use of and reference to the ACES study should be removed throughout the FEIR.[5]

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[4] An EIR's CEQA significance findings must be supported by substantial evidence. "Substantial evidence" means enough relevant information and reasonable inferences from this information that a fair argument can be made to support a conclusion, even though other conclusions might also be reached. (14 CCR § 15384(a).) Notably, argument, speculation, unsubstantiated opinion or narrative, evidence which is clearly erroneous or inaccurate, does not constitute substantial evidence. (*Id.*) In this case, the ACES study should not be used for the purposes of a CEQA analysis, as the exposure levels used in the ACES study were based on diluted NO2 and not particulate matter and therefore actual exposure of particulate matter in this study is unknown. Additionally, during the lab exposure testing, two 2007 Detroit Diesel engines were used, one for a total of 10,090 hours and one for 4031 hours with oil changes at every 250 hours (250 hours = 5,000 miles). Therefore, the study results are based on the best-case scenario and did not account for potential real world wear and tear on diesel engines, poor maintenance, and failure rates of diesel particulate filters.

Mr. Mark Gross
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Further, the air quality and health risk methodology and models used in the FEIR should be fully explained to ensure the information is accessible and understandable to the public. Specifically, the final document should include the presentation of all cancer and non-cancer health risks at the receptor locations of interest for all emissions from construction and operations at the WLC. The methodology should include the use of all the current Office of Environmental Health Hazard Assessment (OEHHA) approved risk assessment methodology contained in the OEHHA Air Toxics Hot Spots Program Risk Assessment Guidelines: Guidance Manual for the Preparation of Health Risk Assessments (February 2015).

Furthermore, we recommend the document include an evaluation of the potential health impacts at the major milestones identified for this project (e.g., beginning in 2015, 2022, and 2035) for each receptor of interest and appropriate exposure duration (i.e., resident would be 30 years). This analysis will allow the presentation of potential health impacts at key milestones and how the potential health risk estimates may change as the project is completed and the facility changes to full operation.

Other ARB Recommendations

Attainment of Federal Ambient Air Quality Standards

The FEIR determines that the proposed project would have significant long term air quality impacts. Specifically, the air quality analysis demonstrates that the project's operational nitrogen oxides (NOx) emissions far exceed the South Coast Air Quality Management District's significance threshold of 55 pounds per day. The projected rise in emissions of criteria pollutants may interfere with current strategy to bring the South Coast Air Basin into attainment with federal air quality standards. Given the level of impacts and the location in the South Coast Air Basin, the project needs to be revised to include substantial air quality mitigation by employing effective and feasible zero and near-zero emission technologies.

Use of Future Baseline in the Health Risk and Air Quality Analysis

Should the City re-circulate the EIR, ARB strongly recommends that the health risk and air quality analysis use both the existing conditions baseline (current conditions) and a future conditions baseline (full build out year, without the project.) This analysis will be useful to the public in understanding the full impacts of the project. *Neighbors for Smart Rail v Exposition Metro Line Construction Authority* (2013) 57 C4th 439 confirmed that the lead agency has discretion on how to best define a baseline under the

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[5] For more information regarding diesel engine exhaust health impacts, please see http://oehha.ca.gov/public_info/DEEposter.html.

Mr. Mark Gross
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circumstances of rapidly changing environmental conditions. In this situation, the project site is located in a federal nonattainment area and is adjacent to residences; given the timeframe for full build out, those conditions may be significantly different from current conditions.

Specifically, it is important to analyze whether anticipated regional air quality improvements in future years as the result of State, federal, and local air quality programs, may be reduced or negated as the result of this project. For those reasons, it is important to ensure that the public has a complete understanding of the environmental impacts of the WLC, as compared to both existing conditions and future conditions.

Charging Infrastructure to Support Zero and Near-Zero Emission Technology

Should the City re-circulate the EIR, ARB recommends including mitigation measures that detail more robust plans for charging and fueling infrastructure, which will be necessary to support increased zero emission vehicles and equipment used on the project site. Mitigation measure 4.3.6.3C indicates that one alternative fueling station will be publicly available prior to the issuance of building permits for more than 25 million square feet. This mitigation measure should include a more comprehensive description of the fueling station, including how that fueling station will adequately meet the needs of the zero and near-zero emission equipment used on site.

Furthermore, mitigation measure 4.3.6.4A indicates two electric vehicle-charging stations for automobiles or light duty trucks shall be provided at each building. The project description does not include an estimation of how many buildings are expected to be developed on site. While the FEIR does provide an estimation of the number of daily trips by passenger vehicles and light duty trucks (54,714 and 2,385 daily trips, respectively), mitigation measure 4.3.6.4A and the associated analysis does not contain an estimation of how many of those trips will be made by electric vehicles and does not provide enough information to evaluate whether mitigation measure 4.3.6.4A satisfies potential charging demand. Given Governor's Executive Order B-16-2012 target of reaching 1.5 million zero emission vehicles on California roadways by 2025 and the Governor's goal of cutting petroleum use in half by 2030, mitigation measure 4.3.6.4A should be expanded to ensure that the charging infrastructure required on-site will meet the needs of the growing numbers of zero emission vehicles that will be accessing the project site.

Mr. Mark Gross
June 8, 2015
Page 8

Statewide Air Quality, Climate and Health Drivers to Reduce Emissions from Freight Hubs

To achieve California's air quality, climate and sustainability goals, and to reduce the health risk from diesel PM in communities located near freight hubs, the State, including public and private partners, must take effective action to transition to a zero and near-zero emission freight system. This effort is laid out in ARB's Sustainable Freight Pathways to Zero and Near-Zero Emissions Discussion Draft, which can be found at http://www.arb.ca.gov/gmp/sfti/Sustainable_Freight_Draft_4-3-2015.pdf.

Closing

Given the scale of the project, the substantial increases in criteria pollutants and greenhouse gas emissions, as well as the potential impact to health risk, it is critical that the FEIR require the use of zero and near-zero emission technologies. Furthermore, the health risk analysis must be revised to ensure that the potential impacts are fully analyzed and disclosed. We would be pleased to provide assistance to help develop the analysis and mitigation measures to ensure that this state-of-the-art facility is able to serve the region's distribution needs, while protecting air quality and public health, as well as minimizing the project's contribution to greenhouse gas emissions. Please include ARB on any further notifications related to the WLC.

If you have questions, please contact me at (916) 322-8382 or freight@arb.ca.gov.

Sincerely,

Heather Arias, Chief
Freight Transport Branch
Transportation and Toxics Division

cc: See next page

Mr. Mark Gross
June 8, 2015
Page 9

cc: Honorable Mayor and Council Members- City of Moreno Valley
        14177 Frederick Street
        Moreno Valley, CA 92552

        State Clearinghouse
        P.O. Box 3044
        Sacramento, CA 95812-3044

        Mr. Ian MacMillan
        Program Supervisor
        South Coast Air Quality Management District
        21865 Copley Drive
        Diamond Bar, California 91765

        Mr. Thomas Jelenic
        Vice President of Planning and Program Management
        Highland Fairview
        14225 Corporate Way
        Moreno Valley, CA 92553

Attachment K

Additional Documentation Attachment to Comment 2-E4

ESA
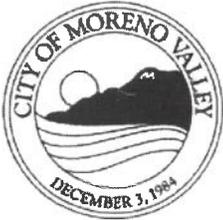
NOTICE OF AVAILABILITY

**Draft Recirculated Revised Sections of the Final
Environmental Impact Report (SCH #2012021045)**

NOTICE IS HEREBY GIVEN that, pursuant to requirements of the California Environmental Quality Act (CEQA), the City of Moreno Valley has prepared a Draft Recirculated Revised Sections of the Final Environmental Impact Report (Draft Recirculated RSFEIR) with a State Clearinghouse number, 2012021045, to revise the air quality, greenhouse gas and energy analyses based on the use of the U.S. Environmental Protection Agency's approval of the use of the EMFAC2017 model on August 15, 2019. The Draft Recirculated RSFEIR also includes revisions to Section 6, Cumulative Impacts, of the Revised Sections of the Final Environmental Impact Report circulated in 2018 (RSFEIR). The revised analyses evaluate the potential environmental impacts associated with construction and operation of the World Logistics Center project and its associated infrastructure.

Project Description: This Notice of Availability (NOA) has been prepared to notify agencies and interested parties that the City of Moreno Valley, as the Lead Agency, has prepared the Draft Recirculated RSFEIR to provide the public and trustee agencies with information about the revised air quality, greenhouse gas and energy potential effects on the environment associated with the construction and operation of the proposed World Logistics Center project and its associated infrastructure on approximately 2,600 acres of land in the eastern portion of the City. The land use entitlements for the World Logistics Center that are in place include the General Plan and Zoning designations, the World Logistics Center Specific Plan, and a request for annexation of unincorporated land. The discretionary approvals that will be considered by the City as part of the approval process consist of a development agreement and Parcel Map 36457. The potential environmental impacts evaluated in the Draft Recirculated RSFEIR are based upon the previously adopted entitlements as well as the development agreement and Parcel Map 36457 allowing 40.6 million square feet of buildings specifically designed to support large scale logistic operations in a quality business environment.

Location: The project site includes the area generally east of Redlands Boulevard, south of the SR-60 Freeway, west of Gilman Springs Road, and north of the San Jacinto Wildlife Area.

Potential Environmental Impacts: Analyses presented in the Draft Recirculated RSFEIR indicates that the proposed project will have significant unavoidable adverse impacts to air quality, as described in detail within the document. In the RSFEIR, the significant unavoidable adverse impacts also included air quality as well as land use, noise, and transportation/traffic. All other environmental effects evaluated in the Final Environmental Impact Report, RSFEIR, and the Draft Recirculated RSFEIR are considered to be less than significant, or can be feasibly reduced with mitigation measures to less than significant levels.

Public Review and Comment Deadline: The City of Moreno Valley is soliciting comments from the public about the Draft Recirculated RSFEIR. Pursuant to Section 21091 of the Public Resources Code, the City has established a review period that runs 45 days, beginning December 17, 2019 through the close of City business on January 31, 2020. The City has also prepared, for informational purposes, a document that shows the changes from the RSFEIR. **If you wish to make written comments on the Draft Recirculated RSFEIR or the changes to the RSFEIR that are identified in a separate document and available for review at the City of Moreno Valley, comments must be received at the City of Moreno Valley Community Development Department by no later than the conclusion of the 45-day review period, 4:30 pm on January 31, 2020.** Written comments on the Draft Recirculated RSFEIR or the changes to the RSFEIR should be addressed to:

Albert Armijo, Interim Planning Manager
14177 Frederick Street
Post Office Box 88005
Moreno Valley, California 92552
Phone: (951) 413-3206
Email: alberta@moval.org

1

<u>Document Availability:</u> The Draft Recirculated RSFEIR, all documents incorporated and/or referenced therein and the changes to the RSFEIR can be reviewed during normal business hours (7:30 a.m. to 5:30 p.m., Monday through Thursday and Friday's, 7:30 a.m. to 4:30 p.m.) at the City of Moreno Valley Planning Division counter, located at 14177 Frederick Street, Moreno Valley, CA 92553. The documents may also be reviewed at the Moreno Valley Library, located at 25480 Alessandro Boulevard, Moreno Valley, California. For your convenience, the document will also be provided on-line at the City's web page, www.moval.org.

Attachment A

EASTERN MUNICIPAL
W A T E R   D I S T R I C T
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RECEIVED

MAR - 5 2020

CITY OF MORENO VALLEY
Planning Division

June 10, 2015

Board of Directors

President
Randy A. Record

Vice President
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Paul D. Jones II, P.E.

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Chairman of the Board,
The Metropolitan Water
District of So. Calif.
Randy A. Record

Legal Counsel
Lemieux & O'Neill

City of Moreno Valley
Community & Economic Development Department
Planning Division
14177 Frederick Street
PO BOX 88005
Moreno Valley, CA 92552-0805

SUBJECT: **World Logistics Center Final Environmental Impact Report (SCH#2012021045), and EMWD's comments**

Dear Mr. Mark Gross,

Eastern Municipal Water District (EMWD) thanks you for the opportunity to review the Notice of Public Hearing for the above referenced project. EMWD offers the attached comments, which help provide consistency throughout the document, when discussing the proposed water and sewer facilities for this project.

In addition, EMWD takes this opportunity to point out the following:

1. To date, a final Master Plan Of Service (POS) has not been completed. The project proponent is required to obtain an approved Master POS of the entire project area, prior to commencing final design. Subsequent component projects will be required to obtain individual phase-related POS, based on the approved Master POS.

2. The subject project is an active project with EMWD's New Business Department, with a water and sewer service Work Order Numbers 15146 and 15147, and a Project Record Number WS2011-399.

Again, EMWD appreciates the opportunity to comment on this project. If you have questions concerning these comments, please feel free to contact me at (951) 928-3777, Ext. 4468, or the project lead engineer, Brian Raines at Ext. 4467.

Sincerely,

Maroun El-Hage, M.S., P.E.
Senior Civil Engineer
New Business Department
(951) 928-3777 x4468
El-hagem@emwd.org

Attachments

PROPOSED WORLD LOGISTICS CENTER PROJECT

Legend:

- World Logistics Center - Specific Plan Boundary
- A portion of the Moreno Highlands Specific Plan 212-1 located outside of the Proposed World Logistics Center Specific Plan Boundary (Proposed Open Space Zone)
- Not a Part
- City Boundary
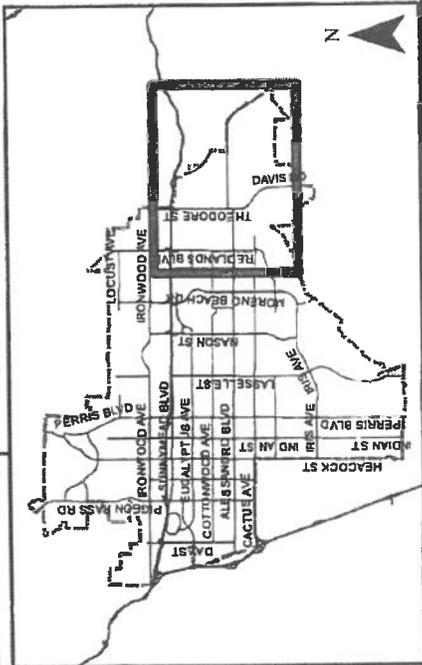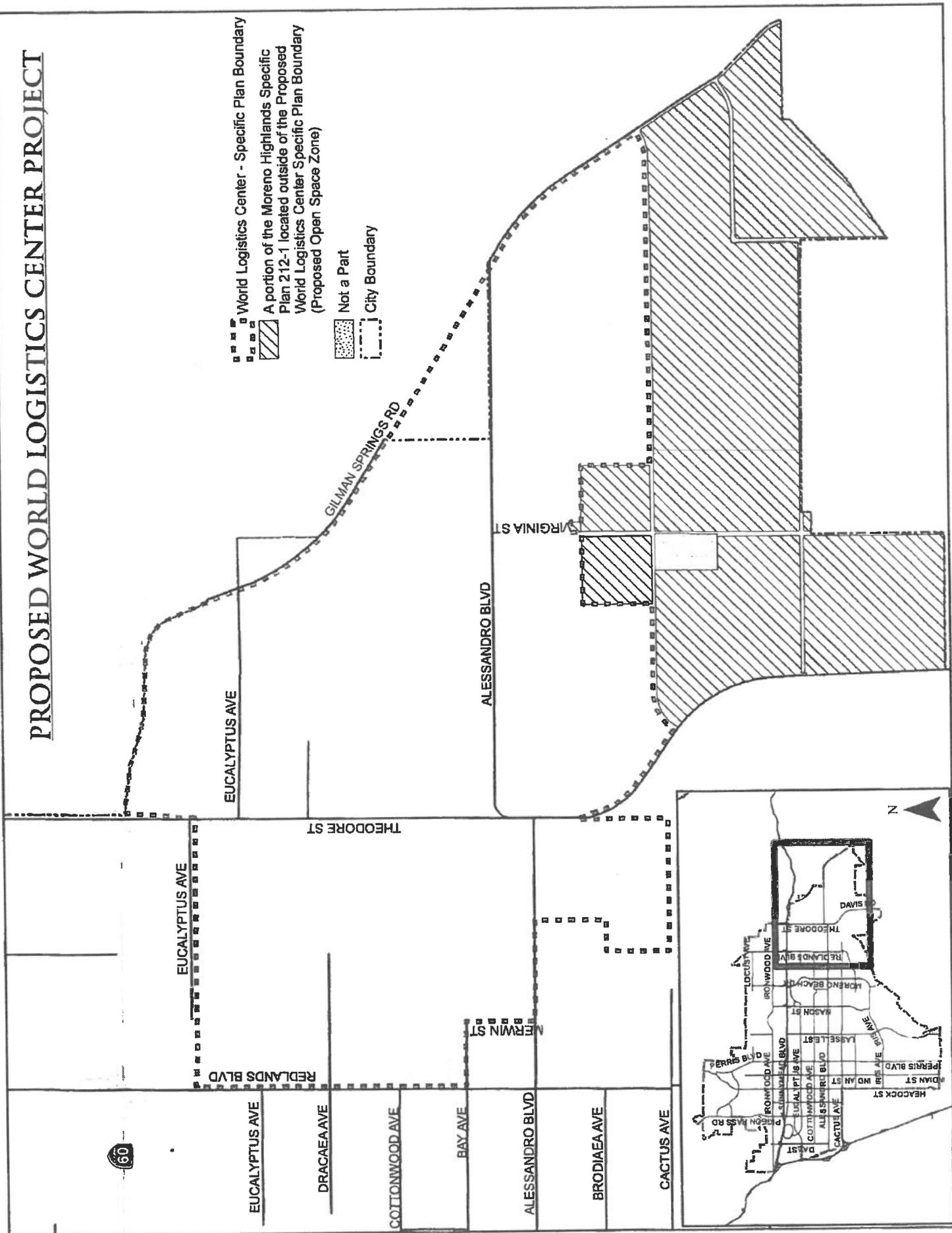
GILMAN SPRINGS RD

EUCALYPTUS AVE

VIRGINIA ST

ALESSANDRO BLVD

THEODORE ST

EUCALYPTUS AVE

EUCALYPTUS AVE

REDLANDS BLVD

NERWIN ST

60

EUCALYPTUS AVE

DRACAEA AVE

COTTONWOOD AVE

BAY AVE

ALESSANDRO BLVD

BRODIAEA AVE

CACTUS AVE

N

DAVIS

THEODORE ST

REDLANDS BLVD

LOCUST

IRONWOOD AVE

MORENO BEACH DR

MASON ST

LASSELLE ST

PERRIS BLVD

FERRIS BLVD

EUCAL PT 18 AVE

IND AN ST

IRE ALE AVE

PERRIS BLVD

HEACOCK ST

INDIAN ST

IRONWOOD AVE

SUMMERFIELD

EUCAL PT 18 AVE

COTTONWOOD AVE

ALESSANDRO BLVD

CACTUS AVE

DAISY

PIGEON PASS RD

- o   Flood Control and Water Conservation District: Amend Storm Drain Master Plan.

- **Other Affected Agencies**
  - o   Western Riverside Council of Governments: TUMF Contributions.
  - o   Eastern Municipal Water District: ~~Water Service Agreements.~~
  - o   Developer will make "fair share" contributions to established development impact fee programs in the cities of Riverside, Perris, and Redlands for local road and intersection improvements identified in the programmatic Traffic Impact Assessment (TIA) included with the EIR (Final EIR Volume 2 Appendix L-1). This item is subject to review and approval by the City Transportation Division.

- **State of California**
  - o   Regional Water Quality Control Board: Water Quality Permitting.
  - o   Department of Transportation (Caltrans): Encroachment Permits for SR-60 and adopt fair share contribution programs for future development within the WLCSP to contribute funds for local road and intersection improvements identified in the programmatic Traffic Impact Assessment (TIA) included with the EIR (Final EIR Volume 2 Appendix L-1).
  - o   California Department of Fish and Wildlife: Streambed Alteration Agreements.

- **Federal Agencies**
  - o   U.S. Army Corps of Engineers: Clean Water Act Permitting.

EMWD's Comment on 6/10/2015:
Please repaace with:

"STANDARD WATER AND SEWER FACILITIES AND SERVICE AGREEMENT"

Final Programmatic Environmental Impact Report
Volume 3 – Revised Draft EIR (Clean)
World Logistics Center Project

Table 1.B: World Logistics Center Project Environmental Impact Summary

Issues/Impacts	Mitigation Measures	Level of Significance
Impact 4.15.6.4 Cumulative Impacts - General Plan Buildout (Year 2035) With Project Conditions Traffic and Level of Service Impacts		
The project will contribute significant amounts of traffic onto roadways and at intersections in the City of Moreno Valley and other cities, and area freeways, after completion of development under the WLCSP (i.e., after 2022).	Implementation of previously identified Measures 4.15.7.4A through 4.15.7.4G for development as it occurs during development under the WLCSP.	Significant and Unavoidable
4.16 Utilities and Service Systems		
LESS THAN SIGNIFICANT IMPACTS		
Construction or Expansion of Water Treatment Facilities		
The project can connect to the existing water supply and will not require the construction of any new water storage or treatment facilities.	No mitigation is required.	Less than Significant
Cumulative Water Supply		
The EMWD has determined that it will be able to provide adequate water supply to meet the ~~project a~~ users, wh ~~improvem~~ Wastewa	No mitigation is required.	Less than Significant
Wastewa Expected wastewater flows from the proposed WLC project will not exceed the capabilities of the serving treatment plant.	No mitigation is required.	No Impact
Wastewater Treatment Capacity and/or New or Expanded Wastewater Facilities		
The proposed WLC project would not require the construction of new wastewater treatment facilities or expansion of existing facilities, which could cause significant environmental effects.	No mitigation is required.	Less than Significant

EMWD comment, on 6/10/15: revise sentence as follows:

"The project can connect to the existing water supply and will not require the construction of any new treatment facilities. The project is required to construct on-site and off-site conveyance piping, booster stations, and storage tanks."

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With implementation of passive and active conservation measures, the EMWD can significantly reduce its retail water demand and continue to do so in the future.

As previously identified, Metropolitan has analyzed the reliability of water delivery through the SWP and the Colorado River Aqueduct. Metropolitan's IRP and 2010 RUWMP conclude that, with the storage and transfer programs developed by Metropolitan, there will be a reliable source of water to serve its member agencies' needs through 2035.

The amount of water demand would be within the existing available supply even with a reduction in deliveries from the SWP. Imported sources of water will be supplemented by an increase in desalination of brackish groundwater, recycled water use, and water use efficiency, and implementation of aggressive conservation measures by the EMWD. The proposed WLC project would not require the construction of new water treatment facilities or expansion of existing facilities, which could cause significant environmental effects.

Annually, a 5-year Capital Improvement Plan (CIP) is prepared by the EMWD. The EMWD's CIP outlines specific projects and their funding sources. Each project is also submitted individually to the Board for authorization and approval. This allows the EMWD to match needed facilities with development trends accurately. Funding for the EMWD's microfiltration plants, distribution pipes, and the recharge and recovery program is listed in the most recent EMWD CIP.

~~All necessary water distribution facilities would be installed simultaneously with required roadway frontage improvements for each phase of development of the proposed WLC project~~. Therefore, the connection to the existing water delivery system would not result in substantial disturbance of existing roadways or water facilities. As previously identified, the potable water demand that would be required for the proposed WLC project would total 1,991.25 AFY. The amount of water demand would be within the existing available supply even with a reduction in deliveries from the SWP. Imported sources of water will be supplemented by an increase in desalination of brackish groundwater, recycled water use, and water use efficiency, and implementation of aggressive conservation measures by the EMWD. The proposed WLC project would not require the construction of new water treatment facilities or expansion of existing facilities, which could cause significant environmental effects.

It should be noted that the water consumption estimates in this section for future logistics uses within the WLCSP are likely overestimated by a significant factor, as a result of the emphasis on xeriscape

> EMWD's Comment, on 6/10/2015:
> Revise sentence as follows:
>
> "All necessary water distribution facilities would be installed, *by the developer and at the developer's cost,* simultaneously with required roadway frontage improvements for each phase of development of the proposed WLC project."

used a "worst-case" scenario as outlined in the WSA prepared by the EMWD (March 21, 2012).

Adherence to standard requirements identified by EMWD and the City associated with the design and installation of new water infrastructure, including the additional water storage tanks and connections to existing and future water infrastructure, would ensure that no significant impacts would result from the construction or operation of the proposed WLC project. Therefore, impacts related to this issue would be less than significant and no mitigation measures would be required other than those measures recommended in other sections addressing potential impacts of off-site improvements (e.g., cultural resources and biological resources).

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It is anticipated that the majority of water for future development would be supplied by imported water from Metropolitan, recognizing the following conditions:

- The ability of Metropolitan to meet the demands of member agencies as described in the 2010 RUWMP as the majority of EMWD's current and future supply rely on Metropolitan's supplies. This assessment is based on representations by Metropolitan that it will provide the water requested by the EMWD for the next 20 years under the conditions set forth in Water Code Section 10910 as authorized by Water Code Section 10631(k). This assessment is subject to review, modification, or rescission in the event that regulations, court decisions, or other events reduce or impair Metropolitan's ability to provide such water.

- The cost of new water supplies will continue to increase. The developer of this project is required to help fund the acquisition of new water supplies, new treatment or recycled water facilities, and water efficiency measures for existing customers to develop new water supplies.

- New customers may also be required to pay a higher commodity rate for water used than existing customers to offset the rising costs to the EMWD for new water supplies.

- The developer will install water-efficient devices such as low-flow toilets and landscaping according to the requirements of the EMWD's water use efficiency ordinance(s) at the time of ... ct on water supplies.

EMWD's Comment on 6/10/2015:

Please replace "City" with "EMWD"

... on a member agency, but predicts the future water demand based on regional growth information. Metropolitan stated in its 2010 RUWMP that, with the addition of all water supplies, existing and planned, Metropolitan would have the ability to meet all of its member agencies' projected supplemental demand through 2035 even under a repeat of historic drought scenarios. For any short-term water shortages and interruptions caused by disaster or unprecedented drought, the plans and policies outlined in the 2010 RUWMP will be implemented.

The proposed WLC project may be conditioned by the City to construct off-site and on-site water facilities needed to distribute water throughout the project area. A plan of service for the proposed WLC project would be approved by the EMWD that would identify specific on-site improvements. The nearest recycled water line is a 24-inch transmission main located approximately 0.25 mile southwest of the project site, at the intersection of Redlands Boulevard and Cactus Avenue. Although currently active recycled water lines are not adjacent to the project site, in the future, it may be possible to serve this project site with recycled water. Irrigated landscaped areas of the proposed WLC project site will be designed to connect to the recycled water system and would utilize recycled water in landscape areas to the extent feasible. EMWD policy recognizes recycled water as the preferred source of supply for ... recreation areas, green-belts, open space co... esthetic impoundment or other water features... the project site will be designed to use recy... available.

EMWD's Comment on 6/10/2015:

Please insert:

"and off-site"

Water Demand Based on the Existing General Plan Land Uses for the Project Site. As noted in Section 3.0, *Project Description*, the Community Development Element[1] of the City's General Plan currently designates the project site as a mix of residential, commercial, business park, and open space land uses. These land use designations are based on the previously approved (1992) Moreno Highlands Specific Plan (MHSP) and were used in developing EMWD's 2010 UWMP. Table 4.16.F summarizes the current land use designations at the project site, their associated acreages, and expected water demand from the 1992 MHSP EIR. The EIR prepared for the MHSP indicated that

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[1]   *City of Moreno Valley General Plan Community Development Element,* City of Moreno Valley, July 11, 2006.

proposed WLC project site. Current capacity at this facility is 16 mgd[1] with an existing average inflow of approximately 11.2 mgd.[2] Under current conditions, the average daily surplus treatment capacity is approximately 4.5 mgd. Generally, water use and wastewater flows are related in that wastewater is generated from indoor water uses.

Flow from the Logistics Development is based on a factor of water use equivalent to 0.01 gpd/sf. These values were determined based on a water demand analysis and benchmarking study conducted to determine water generation factors for similar facilities as outlined in the Technical Memorandum titled *World Logistics Center Water Demands and Waste Water Generation for Buildings* dated March 13, 2012. Since this study is for Specific Plan purposes and because these wastewater generation factors are less than rates used to cover the broad spectrum of light industrial uses, a facility sizing factor was added. This factor is 2.0 times the 0.01 gpd/sf for a wastewater generation factor of 0.02 gpd/sf. Based on a square footage of 40.6 million, the wastewater generated from the logistics uses on the site is 812,000 gpd. An additional 5,100 gpd of flow was added to account for the in-project fueling station. Thus, the total wastewater generated from the site is 817,100 (0.82 mgd). The additional wastewater treatment demand of 0.82 mgd resulting from development of the proposed WLC project totals approximately 18.2 percent of current surplus treatment capacity. Improvements planned for the MVRWRF facility would increase capacity at this facility from 16 mgd to 18 mgd with an ultimate expansion of this facility of 41 mgd. The planned expansion of the MVRWRF to increase capacity from 16 mgd to 18 mgd was completed in December 2013.[3] Impacts associated with wastewater facilities would be less than significant because the amount of wastewater generated by the project would be within the existing surplus treatment capacity at the MVRWRF. ~~The proposed WLC project would not require the construction of new wastewater treatment facilities or expansion of existing facilities, which could cause significant environmental effects. Therefore, impacts associated with wastewater facilities would be less than significant and no mitigation is required.~~

4.16.2.6   Significant Impacts

No impacts related to wastewater services or facilities have been identified as significant for the proposed WLC project.

EMWD's comment, on 6/10/2015: please add the following

"...The proposed WLC project would not require the construction of new wastewater treatment facilities, which could cause significant environmental effects. *However the WLC project is required to construct on-site and off-site conveyance piping to provide service to the project area.* Therefore, impacts associated with wastewater facilities would be less than significant and no mitigation is required."

EMWD are reviewed throughout the year. EMWD has a funding and construction mechanism in place that ensures improvements to EMWD facilities occurs in a timely manner. This funding mechanism is referred to as EMWD's Sewer Financial Participation Charge Program. For all new development within the EMWD service area, the Sewer Financial Participation Charge is allocated to assist in the financing of any future collection and disposal facilities and any future sewer treatment plant facilities.

---

[1] *5.13 Public Services and Utilities,* City of Moreno Valley General Plan Final EIR, July 2006.
[2] Eastern Municipal Water District Moreno Valley Regional Water Reclamation Facility, http://www.emwd.org/modules/.aspx?documentid=1423, website accessed April 2, 2012.
[3] Approval and Authorize an Amendment (246,044) to the Agreement with Carollo Engineers for Constuction Management and Engineering Support Services During Construction of the MVRWRF, Eastern Municipal Water District, July 2, 2014, http://www.emwd.org/home/showdocument?id=10415.

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Cumulative development would not exceed the capacity of the wastewater treatment system because the MVRWRF would expand as growth occurred.

The proposed WLC project would not have a cumulatively significant impact on wastewater infrastructure because the proposed WLC project would not require the expansion of existing infrastructure, only connections to existing infrastructure would be required by the project. By adhering to the wastewater treatment requirements established by the Santa Ana RWQCB through the NPDES permit, wastewater from the project site that is processed through the MVRWRF would meet established standards. As the wastewater from all development within the service area of the MVRWRF would be similarly treated under the NPDES, no cumulatively significant exceedance of Santa Ana RWQCB wastewater treatment requirements would occur.

> EMWD's Comment, on 6/10/2015:
> 4.16 revise sentence as follows:
>
> 4.16 "The proposed WLC project would not have a cumulatively significant impact on wastewater infrastructure because the proposed WLC project would not require the expansion of existing *waste water treatment facilities, and is only required to construct on-site and off-site conveyance piping to connect to existing infrastructure."*

Additionally, Waste Management of the Inland Empire will also use other County landfills in the area, such as the Lamb Canyon Landfill on County land near the City of Beaumont and the El Sobrante Landfill in the City of Corona. The Badlands Sanitary Landfill is designated a Class III landfill run by the County of Riverside.[2] Waste types accepted at the Badlands Sanitary Landfill include agricultural, construction/demolition, industrial, mixed municipal, and tires.

The Badlands Sanitary Landfill currently has a permitted capacity of 33.5 million cubic yards with a remaining capacity of 14.7 million cubic yards.[3] The tonnage of any mass of solid waste is dependent on the material (e.g., metals, paper, and green waste) and its density (compacted or uncompacted). Utilizing conversion factors from various jurisdictions, one cubic yard of compacted municipal solid waste typically weighs 750 pounds (0.37 ton).[4] Based on this conversion factor, remaining space at the Badlands Sanitary Landfill totals approximately 5.45 million tons with an estimated closure date of January 2024. The maximum daily permitted throughput of this facility is 4,000 tons/day. The Badlands Sanitary Landfill currently accepts approximately 1,683 tons/day.[5]

Recyclable materials collected by Waste Management of the Inland Empire are handled at the Moreno Valley Transfer Station owned and operated by Waste Management, Inc. The Moreno Valley Transfer Station is a large volume transfer and processing facility that accepts the following waste types: construction and demolition materials, green materials, metals, and mixed municipal waste. The Moreno Valley Transfer Station currently has a permitted capacity of 2,600 tons per day and currently accepts 2,000 tons per day. This facility currently has the capacity to accept an additional 600 tons per day.

---

[1] Trash service in the City of Moreno Valley is mandatory and Waste Management of Inland Valley is the only solid waste service provider.

[2] Class III landfills are required to be located where adequate separation can be provided between non-hazardous solid waste and surface and subsurface waters. This class of landfill is not permitted to accept hazardous waste.

[3] *Badlands Sanitary Landfill Facility/Site Summary Details,* CalRecycle website, http://www.calrecycle.ca.gov///AA-0006//, website accessed April 2, 2012.

[4] http://www.recyclemaniacs.org/doc/measurement-tracking/CURC-profile-input-form-with-conversion-guide.xls, website accessed December 21, 2011.

[5] Based on 2011 average; e-mail correspondence with John Farrar, Administrative Services Assistant, County of Riverside Waste Management Department, December 21, 2011.

Final Programmatic Environmental Impact Report
Volume 3 – Revised Draft EIR (Clean)
World Logistics Center Project

Table 1.B: World Logistics Center Project Environmental Impact Summary

Issues/Impacts		Mitigation Measures	Level of Significance
		available. This measure shall be implemented to the satisfaction of the City Planning Division and Land Development Division/Public Works.	

Impact 4.16.1.6.2 Storm Water Drainage Requirements

Issues/Impacts		Mitigation Measures	Level of Significance
The development of the proposed WLC project would introduce a substantial amount of impervious surfaces on the site, which could result in significant increases in off-site runoff.	**4.16.1.6.2A**	Each Plot Plan application for development shall include a concept grading and drainage plan, with supporting engineering calculations. The plans shall be designed such that the existing sediment carrying capacity of the drainage courses exiting the project area is similar to the existing condition. The runoff leaving the project site shall be comparable to the sheet flow of the existing condition to maintain the sediment carrying capacity and amount of available sediment for transport so that no increased erosion will occur downstream. This measure shall be implemented to the satisfaction of the City Land Development Division/Public Works.	Less than Significant with Mitigation

Cumulative Impacts to Water Supply Services

Issues/Impacts		Mitigation Measures	Level of Significance
The proposed WLC project would connect to existing conveyance infrastructure and adequate treatment capacity is available, so the proposed WLC project would not make a significant contribution to any cumulatively considerable impacts on water supply or infrastructure.		Mitigation not required	Less than Significant with Mitigation

Impact 4.16.4.6.3

Impact 4.16.4.6.1 Construction or Expansion of Electrical and Natural Gas Facilities

Issues/Impacts		Mitigation Measures	Level of Significance
Based on calculations contained Tables 4.16.I and 4.16.J, the proposed WLC project would consume approximately 376,426 megawatt-hours (MWh) of electricity and almost 14.6 million cubic feet of natural gas per year. Therefore, the proposed project may induce the need to construct new electrical and natural gas facilities. This is a significant impact that requires mitigation.	**4.16.4.6.1A**	Each application for a building permit shall include energy calculations to demonstrate compliance with the California Energy Efficiency Standards confirming that each new structure meets applicable Building and Energy Efficiency Standards. The plans shall also ensure that buildings are in conformance with the State Energy Conservation Efficiency Standards for Nonresidential buildings (Title 24, Part 6. An EMWD comment, on 6/10/15: please incorporate in the sentence the sa following: En *"The project can connect to the existing water supply and will not require the construction* sig *of any new treatment facilities. The project is required to construct on-site and off-site* co *conveyance piping, booster stations, and storage tanks."* Co materials, or permeable or porous pavement, for all roadways and walkways not within the public right-of-way, to minimize the absorption of solar heat and	Less than Significant with Mitigation

5.2 Recycled Water

EMWD policy recognizes recycled water as the preferred source of supply for all non-potable water demands, including irrigation of recreation areas, green-belts, open space common areas, commercial landscaping, and supply for aesthetic impoundment or other water features. The proposed project is near an existing recycled water line and in the future recycled water may be available for the project.

According to EMWD policy, the project may be conditioned to construct a recycled water system physically separated from the potable water system. The system will need to be constructed to recycled water standards. The project may also be conditioned to construct off-site recycled water facilities. EMWD will make a final determination on requirements for recycled water use and facilities during the plan of service phase of the project.

5.3 Duration of Approval – 3 Year Maximum

This assessment will be reviewed every three years until the project begins construction. The project applicant shall notify EMWD when construction has begun. The review will insure that the information included in this assessment remains accurate and no significant changes to either the project or EMWD's water supply have occurred. If neither the project applicant nor the lead agency contacts EMWD within three years of approval of this WSA, it will be assumed that the proposed project no longer requires the estimated water demand calculated, the demand for this project will not be considered in assessments for future projects, and the assessment provided by this document will become invalid.

5.4 Conclusion

EMWD relies on MWD to meet the needs of its growing population. MWD stated in its 2010 RUWMP that with the addition of all water supplies, existing and planned, MWD would have the ability to meet all of its member agencies' projected supplemental demand through 2035, even under a repeat of historic multi-year drought scenarios.

Based on present inf[...] EMWD's comment on 6/10/15: While this requirement for additional funding is not adopted at this time, the project may be subject to this requirement if and when EMWD's Board Of Directors approves such measures in the future.

that, when combined [...]
supply for its membe[...]
water supply to meet [...]
demands.

In the event the lead agency determines adequate water supply exists for this project, the developer of this project is required to meet with EMWD staff to develop a plan of service. The plan of service will detail water, wastewater and recycled water requirements to serve the projects. An agreement developed prior to construction will determine additional funding required to reduce existing customer demand on imported supplies through the expansion of local resources. The reduction of existing customer demand on imported water supplies will free up allocated imported water to be used to serve this project under multiple dry year conditions. The amount of funding will be determined by the EMWD and may take the form of a new component of connection fees or a separate charge. The estimated cost of desalinated water is between $1,400 and $1,700 per AF. These costs are expected to increase over time.

If there is a change in the circumstances detailed in this assessment, EMWD will address the changes in the plan of service for the project. Modifications at the plan of service stage could reduce the amount of water available to serve this project.