Attachment 3

ADDITIONAL DOCUMENT "EVALUATING ANNUAL SALES GROWTH ESTIMATES AND RED/GREEN STICKER METHODOLOGY CHANGES IN RV2013" IS ADDED TO THE RECORD IN SUPPORT OF: "ATTACHMENT C: EMISSIONS ESTIMATION METHODOLOGY FOR OFF-HIGHWAY RECREATIONAL VEHICLES" OF THE STAFF REPORT FOR "ADOPTION OF EVAPORATIVE EMISSION CONTROL REQUIREMENTS FOR OFF-HIGHWAY RECREATIONAL VEHICLES"

January 2014

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Evaluating Annual Sales Growth Estimates and Red/Green Sticker Methodology Changes in RV2013

The objective of this analysis is to use updated data to evaluate the accuracy of sales growth forecasts embedded in RV2013, the model used to estimate emissions from Recreational Vehicles for the Staff Report: Initial Statement of Reasons (ISOR) for Proposed Rulemaking–Adoption of Evaporative Emission Control Requirements for Off-Highway Recreational Vehicles (2013). The analysis also discusses changes in the methodology for red/green stickers and its impact on all-terrain vehicles (ATV) and off-highway motorcycles (OMC).

Attachment C of the ISOR (Section III.B.1.) describes the use of Department of Motor Vehicle (DMV) data in RV2013 to calculate vehicle populations by category. At the time of rulemaking, DMV data for calendar years 2000-2010 had been fully processed, and were therefore included in the analysis. To process DMV data, staff evaluated three DMV database snapshots (April of current year, October of current year, and April of following year) and filtered the data to obtain the appropriate fields and records for off-highway vehicles (OHV). Important fields such as vehicle identification number (VIN), allocated county code, zip, status code, year model, body type model, and vehicle type were used. Additional information not available in the DMV registration files such as 2-stroke (G2) or 4-stroke (G4) engine type was obtained through the use of VIN decoder software by R.L. Polk.

Update of Vehicle Annual Sales Growth

Since the inventory was published, staff completed processing the 2011 DMV data. Staff used the newly available DMV data to count new OHV sales in California. In addition, staff used a preliminary analysis technique to estimate vehicle counts in 2012. The preliminary analysis involved using a snapshot of DMV's database taken in October 2012. The use of the snapshot alone results in a slightly less accurate count than when the data are fully processed. The reason for this is because new vehicle sales recorded after October were not included in the estimate.

In addition to new DMV data, staff also evaluated more current economic forecasts. In the ISOR, staff described how vehicle sales correlate with general economic conditions; how the 2012 University of California, Los Angeles (UCLA) forecast was used for the correlation; and how the UCLA forecast was used to forecast new vehicle sales. After the inventory was finalized for the ISOR, UCLA released their 2013 forecast. In this analysis, staff used the updated 2013 UCLA forecast to re-project new vehicle sales.

Table 1 provides the new vehicle registrations in 2011 and an estimate of new vehicle registrations in 2012 by OHV category (off-highway motorcycles (OMCs) and all-terrain vehicles (ATVs)).

Table 1. OMC and ATV Registration from DMV

Year	OMC Registration	ATV Registration
2011	3361	7153
2012	4763*	9222*

* estimated

Using the new vehicle registration counts and updated economic forecast, staff re-projected current and future new vehicle sales using the same methods described in Attachment C of the ISOR. Results are shown in Figures 1 through 3. Figure 1 shows the comparison for OMCs. The updated UCLA forecast did not appreciably change the projection, and new vehicle sales observed in 2011 and estimated in 2012 are consistent with previous projections.

Figure 1. OMC Historical and Estimated New Vehicle Sales

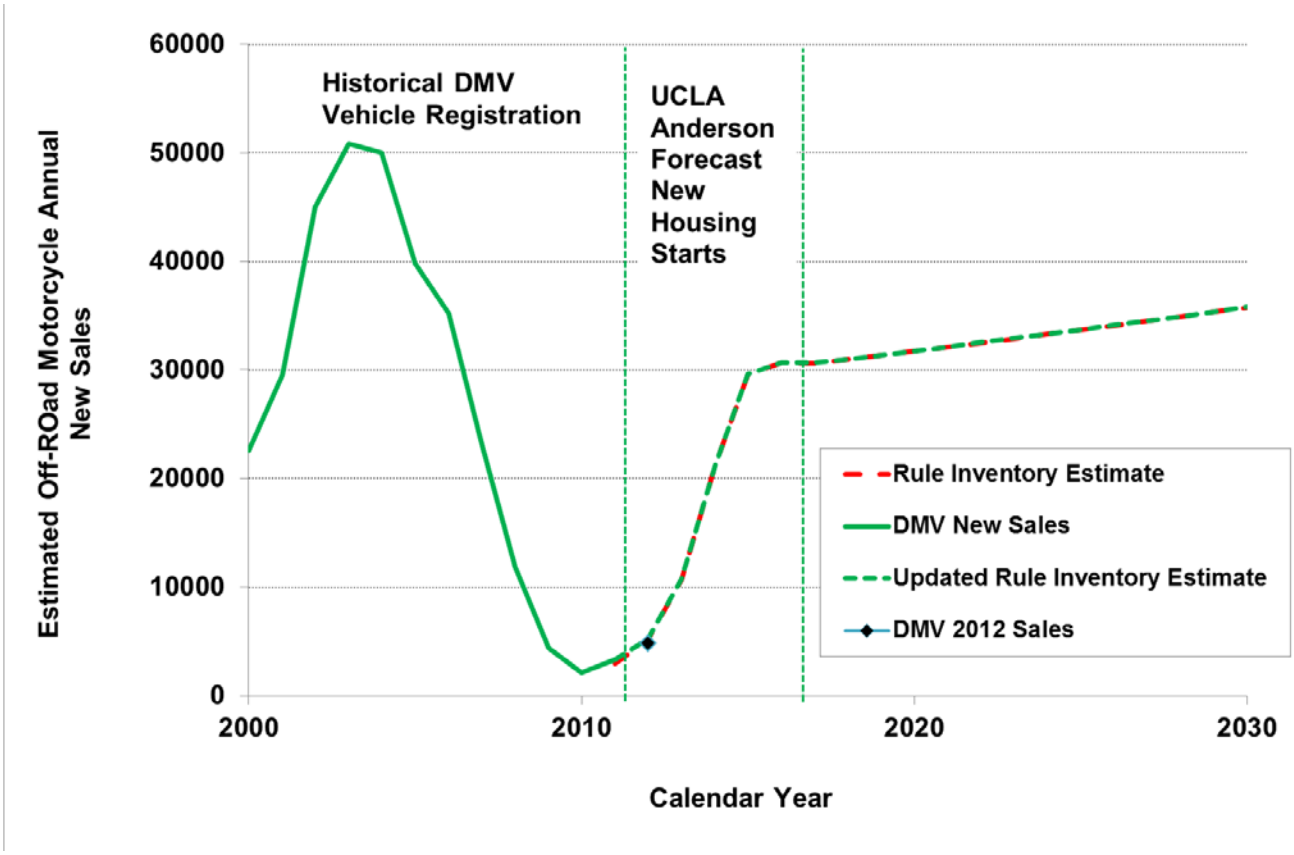


Figure 2 shows the same comparison for ATVs. Results show the new vehicle sales in 2011 were higher than projected by staff. However, when the updated UCLA forecast is applied, the revised forecast is consistent with the 2012 ATV sales estimate.

Figure 2. ATV Historical and Estimated New Sales

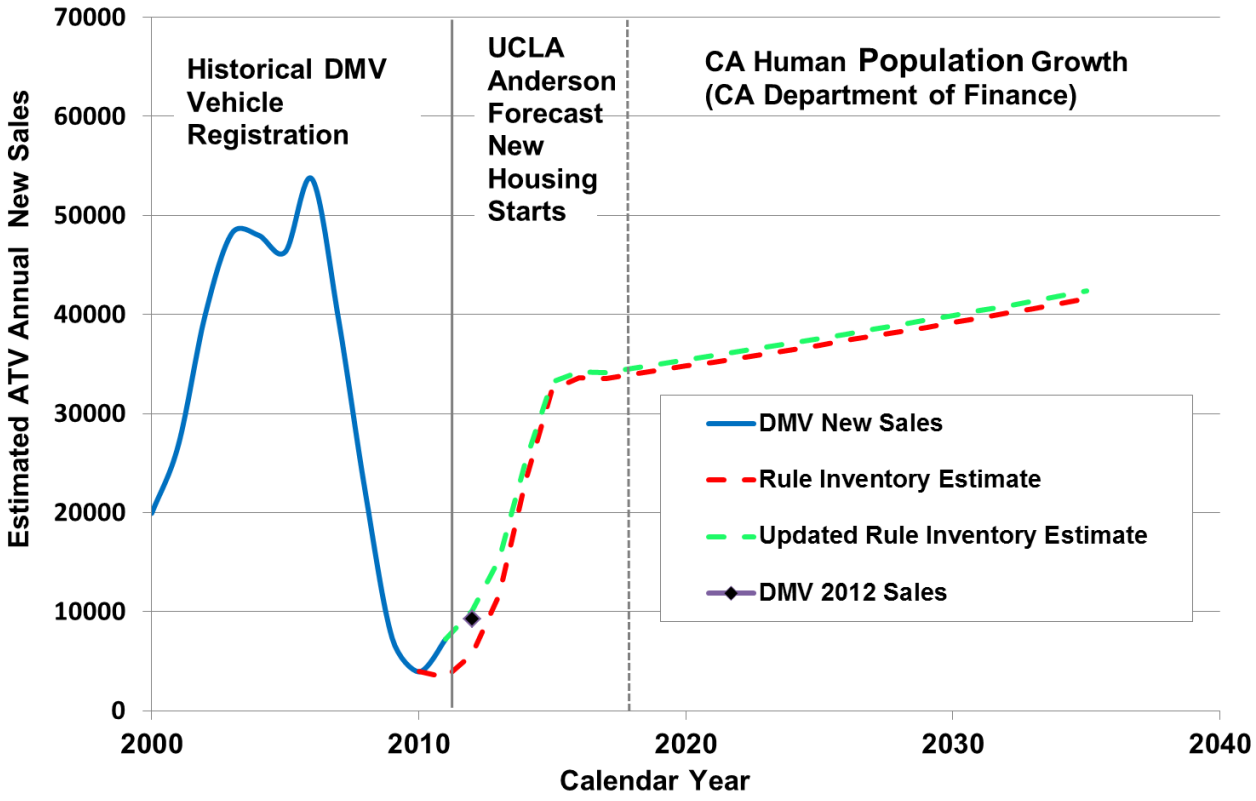
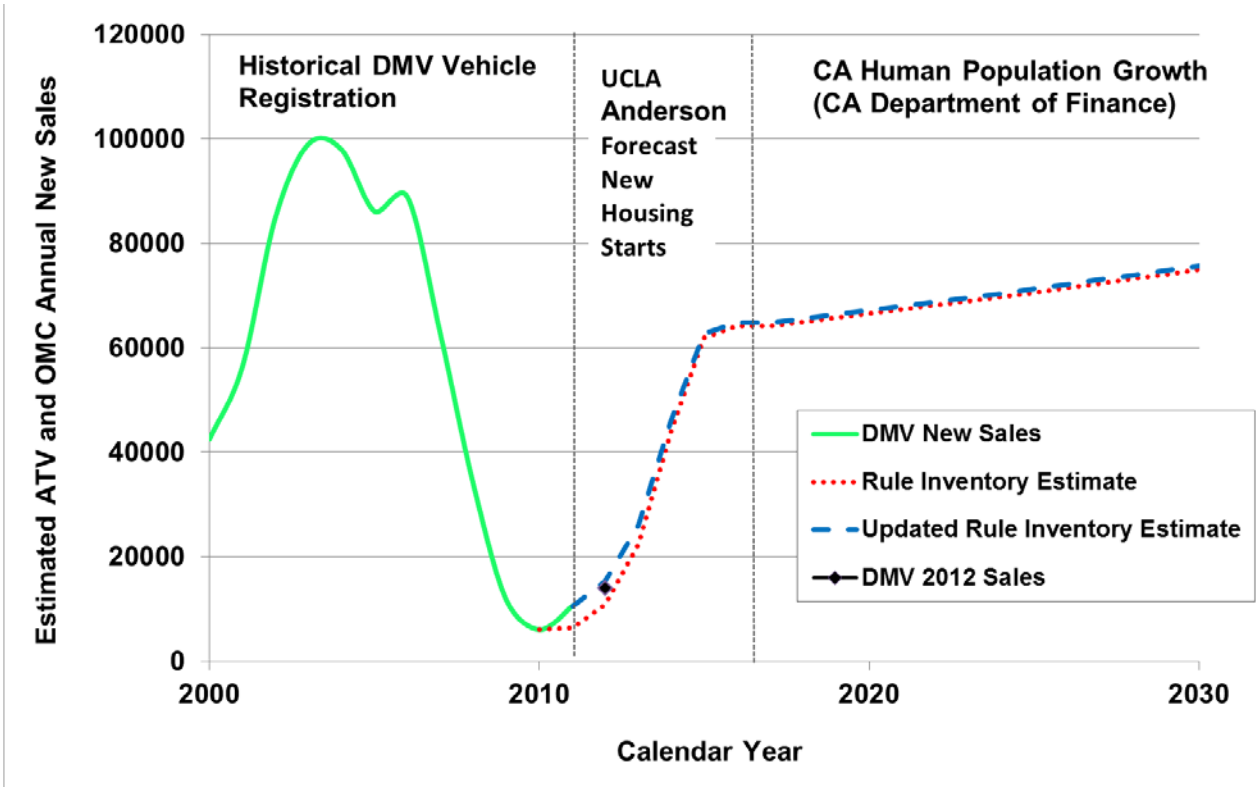


Figure 3 shows the combined OMC and ATV revised new vehicle sales trend and forecast. Results show that staff underestimated ATV sales in 2011 and, as a result, underestimated the combined sales for motorcycles and ATVs in 2011. However, because the updated forecast has a steeper rate of recovery, the 2012 new vehicle sales estimates are consistent with the revised forecast.

Figure 3. Combined OMC and ATV Historical and Estimated New Vehicle Sales



Update of Red/Green Sticker Population

After the ISOR for Proposed Rulemaking was published, the red/green sticker assumptions used in the model were revised. Previously, G2 engine powered ATVs and OMCs model year (MY) 2003 and newer were all assumed to be red stickers, and all G4 engine powered ATVs and OMCs were all considered green sticker. For the revised methodology, VINs were used to identify the status of red/green stickers on ATVs and OMCs. In particular, the eighth digit of a VIN with the letter “C” or number “3” indicates that the vehicle belongs to the red sticker category. As a result, staff can identify more red stickers including G4 ATVs and G4 OMCs in addition to the red stickers that were previously identified as G2 ATVs and G2 OMCs. The revised analysis suggests a large portion of G4 OMCs have red stickers while only a small fraction of G4 ATVs have red stickers. Table 2 lists the percentage of G4 red stickers for ATVs and OMCs identified by VINs from DMV. Since DMV data only provides information up to MY2012, for MY2013 and beyond, the average percentage from MY2005 through 2012 was used.

Table 2. Percent Red Stickers for 4-Stroke ATV and OMC

MY	ATV G4 Red Sticker	OMC G4 Red Sticker
2005	0.21%	25.81%
2006	0.25%	30.91%
2007	0.09%	38.47%
2008	0.09%	53.07%
2009	0.06%	65.30%
2010	0.00%	79.08%
2011	0.00%	72.65%
2012	0.00%	61.82%
2013+	0.00%	53.00% *

* Average from MY2005 to MY2012

Amendment of the Proposed Rule

The previous RV2013 assumed all OMC and ATV with red stickers were subject to the proposed evaporative emission standards for OHVs. As the Board adopted the proposed rule with the exemption of all red stickers, the emission benefits were reduced. The revised RV2013 (RV2013 V2) excludes all red sticker vehicles from the evaporative emission controls starting in calendar year 2018.

Revised Emission Benefits

As a result of the aforementioned changes including: (1) the revised forecast of annual sales using latest 2011 DMV and 2013 UCLA economic forecast; (2) revised estimate of red and green stickers population based on VINs; and (3) the exemption of red stickers from the proposed rule, there are changes in baseline emissions and rule benefits (see Figure 4). The increase of baseline emissions is primarily due to the additional G4 red sticker population (with uncontrolled emissions), which was not identified in RV2013. The decrease of rule benefits is primarily caused by the exemption of red stickers from the evaporative controls.

Specifically as shown in Table 3 in calendar year 2035, the statewide summer reactive organic gas (ROG) emission benefit is now 6.6 tpd as compared to previous estimate of 9.9 tpd. Table 4 summarizes the revised emission baseline and benefits for the State, San Joaquin, Bay Area, and South Coast air districts. As expected, the rule benefits for individual districts also decrease due to the latest revision.

Figure 4. Comparison of Original (RV2013) vs. Revised (RV2013 V2) Statewide Summer ROG Emissions (tpd)

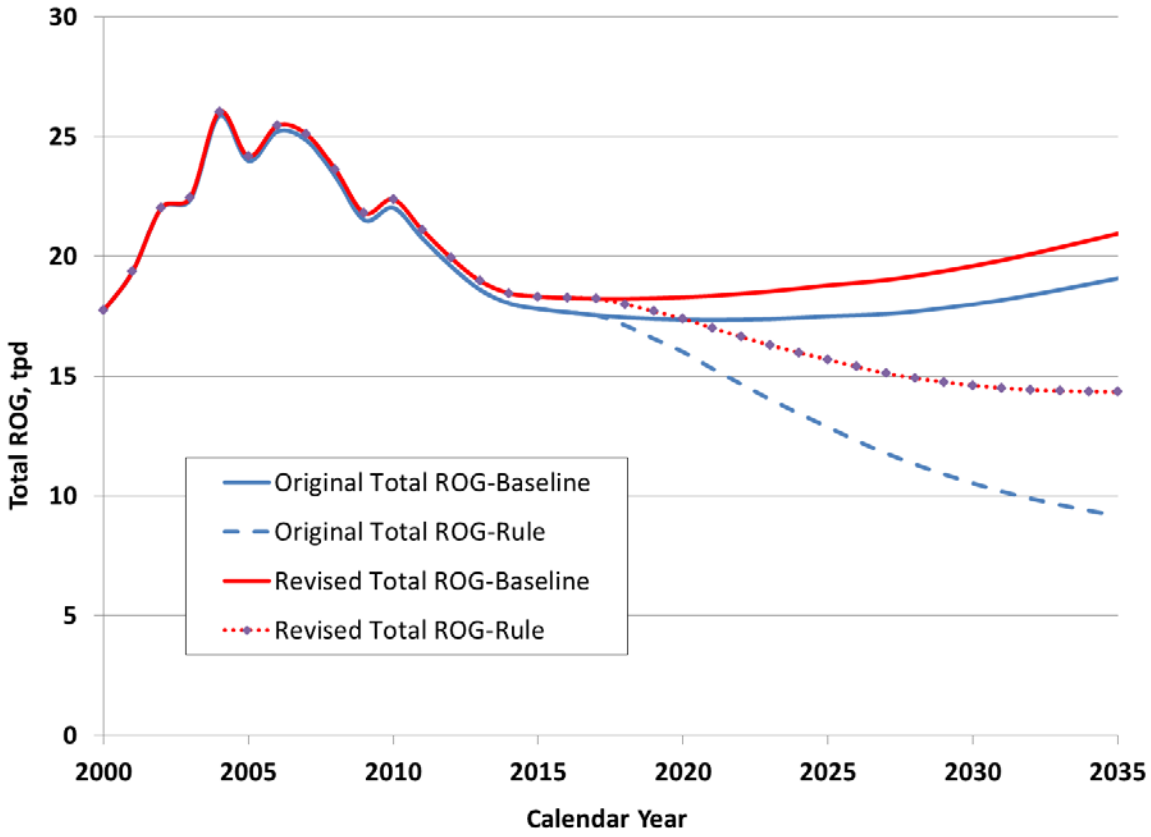


Table 3. Summary of Original vs. Revised Statewide Summer ROG Emissions (tpd)

	2020		2023		2035	
	RV2013	RV2013 V2	RV2013	RV2013 V2	RV2013	RV2013 V2
Baseline	17.4	18.3	17.4	18.5	19.1	20.9
With Controls	16.0	17.4	14.0	16.3	9.2	14.3
Benefits	1.4	0.9	3.4	2.2	9.9	6.6

Table 4. Revised ROG Emission Results for State, Bay Area, South Coast and San Joaquin Air District from RV2013 V2 (tpd)

2020			
State	Baseline	Proposed Rule	Benefit
Hot Soak	0.677	0.633	0.044
Running Loss	1.570	1.370	0.200
Diurnal	10.588	9.940	0.648
Exhaust	5.360	5.360	0.000
ROG (total)	18.300	17.400	0.900
NOx	0.764	0.764	0.000

2023			
State	Baseline	Proposed Rule	Benefit
Hot Soak	0.706	0.600	0.106
Running Loss	1.630	1.150	0.480
Diurnal	11.140	9.490	1.650
Exhaust	4.960	4.960	0.000
ROG (total)	18.550	16.300	2.250
NOx	0.830	0.830	0.000

2035			
State	Baseline	Proposed Rule	Benefit
Hot Soak	0.837	0.527	0.310
Running Loss	1.900	0.700	1.200
Diurnal	13.340	8.300	5.040
Exhaust	4.730	4.730	0.000
ROG (total)	20.940	14.330	6.610
NOx	1.010	1.010	0.000

Bay Area AQM	Baseline	Proposed Rule	Benefit
Hot Soak	0.081	0.076	0.005
Running Loss	0.191	0.166	0.026
Diurnal	1.242	1.178	0.064
Exhaust	0.605	0.605	0.000
ROG (total)	2.130	2.035	0.095
NOx	0.090	0.090	0.000

Bay Area AQM	Baseline	Proposed Rule	Benefit
Hot Soak	0.084	0.070	0.014
Running Loss	0.198	0.137	0.061
Diurnal	1.308	1.144	0.164
Exhaust	0.550	0.550	0.000
ROG (total)	2.160	1.920	0.240
NOx	0.100	0.100	0.000

Bay Area AQM	Baseline	Proposed Rule	Benefit
Hot Soak	0.100	0.060	0.040
Running Loss	0.228	0.076	0.152
Diurnal	1.578	1.075	0.503
Exhaust	0.520	0.520	0.000
ROG (total)	2.446	1.740	0.706
NOx	0.120	0.120	0.000

SJV APCD	Baseline	Proposed Rule	Benefit
Hot Soak	0.128	0.120	0.008
Running Loss	0.300	0.260	0.040
Diurnal	1.630	1.520	0.110
Exhaust	0.972	0.972	0.000
ROG (total)	3.050	2.890	0.160
NOx	0.133	0.133	0.000

SJV APCD	Baseline	Proposed Rule	Benefit
Hot Soak	0.133	0.112	0.021
Running Loss	0.313	0.218	0.095
Diurnal	1.715	1.440	0.275
Exhaust	0.877	0.877	0.000
ROG (total)	3.056	2.660	0.396
NOx	0.144	0.144	0.000

SJV APCD	Baseline	Proposed Rule	Benefit
Hot Soak	0.156	0.095	0.061
Running Loss	0.360	0.120	0.240
Diurnal	2.047	1.210	0.837
Exhaust	0.800	0.800	0.000
ROG (total)	3.380	2.240	1.140
NOx	0.176	0.176	0.000

SCAQMD	Baseline	Proposed Rule	Benefit
Hot Soak	0.060	0.057	0.003
Running Loss	0.130	0.116	0.014
Diurnal	3.800	3.565	0.235
Exhaust	0.500	0.500	0.000
ROG (total)	4.528	4.267	0.261
NOx	0.076	0.076	0.000

SCAQMD	Baseline	Proposed Rule	Benefit
Hot Soak	0.064	0.055	0.009
Running Loss	0.138	0.098	0.040
Diurnal	4.000	3.398	0.602
Exhaust	0.470	0.470	0.000
ROG (total)	4.710	4.050	0.660
NOx	0.080	0.080	0.000

SCAQMD	Baseline	Proposed Rule	Benefit
Hot Soak	0.076	0.049	0.027
Running Loss	0.160	0.063	0.097
Diurnal	4.800	2.940	1.860
Exhaust	0.466	0.466	0.000
ROG (total)	5.540	3.550	1.990
NOx	0.100	0.100	0.000