

State of California  
AIR RESOURCES BOARD

**STAFF REPORT: INITIAL STATEMENT OF REASONS FOR  
RULEMAKING**

**PUBLIC HEARING TO CONSIDER AMENDMENTS TO THE CALIFORNIA  
REGULATIONS FOR NEW 1997 AND LATER OFF-HIGHWAY  
RECREATIONAL VEHICLES AND ENGINES**

Date of Release: **June 2, 2006**

Scheduled for Consideration: **July 20, 2006**

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**Staff Report: Initial Statement of Reasons for  
Proposed Rulemaking**

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Attachment A:           Proposed Regulatory Amendments

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## Executive Summary

In 1994, the Air Resources Board (ARB or Board) approved the off-highway recreational vehicle (OHRV) regulation. This rulemaking established exhaust emission standards for off-road motorcycles and all-terrain vehicles (ATV), in an effort to reduce ozone. The regulated pollutants were hydrocarbons (HC) and carbon monoxide (CO).

The OHRV regulation has been amended twice since its adoption. In 1998, amendments were made to reduce the impact on dealers and off-road enthusiasts resulting from the limited number of vehicles meeting the emission standards. Vehicles not meeting the standards became eligible for recreational use on public lands, but only at times and places unlikely to impact ozone levels. Although this was initially implemented in 1998, inaccurate registrations necessitated a second amendment to the regulation. In 2003, the Board approved additional amendments that recognized a delay in full enforcement of the riding season restrictions.

In 2002, the United States Environmental Protection Agency (U.S. EPA) promulgated a federal regulation that established similar OHRV exhaust standards but also included evaporative emission standards. The federal exhaust standards are not as stringent as California's, even though oxides of nitrogen (NO<sub>x</sub>) are also regulated, and they do not establish riding season restrictions. Moreover, even less stringent standards apply to small displacement OHRV engines.

In this rulemaking, staff is proposing the following:

- Harmonize with U.S. EPA evaporative emission standards
- Harmonize with U.S. EPA on which utility vehicles may certify using the ATV test procedures
- Insert in the regulatory text proper the labeling requirements that are currently incorporated by reference
- Revise the riding seasons for noncomplying OHRVs

The proposed evaporative emissions standards will reduce reactive organic gases statewide by approximately 4.5 tons per day in 2020. Because the federal and California evaporative emission requirements would be the same, industry will not incur additional costs due to California's requirements.

Allowing certain utility vehicles to certify using the ATV test method will reduce industry's compliance cost. However, the exhaust emission standards for these vehicles are more stringent than the current California or federal ATV standards, which will assure that emission reductions are not compromised.

Inserting the labeling requirements (with which industry is already familiar) will clarify that these requirements, despite being sunsetted for on-road motorcycles in a 2002 rulemaking, continue to apply to OHRVs.

Lastly, revising the riding seasons to coincide with current periods of clean air will allow more riding opportunities for owners of non-emission controlled OHRVs, and other changes will simplify enforcement by public land agency personnel.

The staff recommends the Board approve the proposed amendments.

## I. INTRODUCTION

The California Clean Air Act, codified in the Health and Safety Code, requires the Air Resources Board (ARB or the Board) to regulate emissions from certain off-road or non-vehicular engines and other non-vehicular sources (sections 43013 and 43018, Health and Safety Code). This legislation specifically mandates that ARB adopt measures to reduce emissions from off-highway vehicles and off-highway motorcycles. The off-highway motorcycles and all-terrain vehicles (ATVs) subject to this proposal are referred to hereafter under the general term “off-highway recreational vehicles,” or OHRVs.

The regulatory proposal contains amendments that will lead to additional emission reductions and more efficient enforcement of the OHRV regulation. The proposed amendments include evaporative emission standards, revision of the riding seasons and locations for OHRVs that do not meet California’s exhaust emission standards, and addition of exhaust and evaporative standards for a new subcategory – recreational utility vehicles. Following a synopsis of previous regulatory activity, the proposed amendments to the OHRV regulation are discussed in greater detail.

## II. BACKGROUND

### *A) Description of Category and Emissions Inventory*

Off-road motorcycles and ATVs comprise the majority of vehicles in the OHRV category. Both are powered by two-stroke or four-stroke engines and are used primarily on trails and other types of terrain by off-road enthusiasts. Examples of each are shown below:



Off-Road Motorcycle

OHRVs



All-Terrain Vehicle (ATV)

The exhaust from uncontrolled OHRVs is high in hydrocarbons (HC), which are reactive organic gases (ROG) that form ozone. Table 1, below, shows the ROG, carbon monoxide (CO) and oxides of nitrogen (NO<sub>x</sub>) emissions inventory for the category.

Table 1.

Statewide Emissions Inventory<sup>1</sup>  
Annual Average  
(tons per day)

Year	Population	ROG	CO	NO <sub>x</sub>
1992	300,000	37.1	85.8	0.4
2005	644,000	28.8	86.6	1.1
CHANGE	+344,000	-8.3	+0.8	+0.7

Despite the fact that the OHRV population has more than doubled over the past 14 years, ROG emissions are continuing to decrease. The reduction in ROG emissions is due to the OHRV exhaust emission standards that the Board adopted in 1994, which are discussed in the next section. The minor increase in NO<sub>x</sub> emissions is due to leaner calibrations and a shift from two-stroke to four-stroke technology, steps taken by OHRV manufacturers to reduce ROG emissions. The NO<sub>x</sub> increase is more than offset by the greater reductions in ROG emissions achieved.

## **B) California Regulatory Activity**

### **1) Initial Rulemaking**

The Board first adopted the OHRV regulation (sections 2410-2414, title 13, California Code of Regulations (CCR), and the documents incorporated by reference therein) in January 1994. The primary goal of the regulation was to control a significant source of ozone-forming emissions. To that end, the regulation implemented exhaust emissions standards for a segment of off-road vehicles that, prior to 1994, were not subject to any emission control requirements. Specifically, the Board adopted exhaust emission standards for off-road motorcycles and ATVs. Table 2, below, shows the exhaust emission standards that the Board adopted for OHRVs, based on a transient, chassis dynamometer test.

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<sup>1</sup> Data for 1992 emissions inventory obtained from 1994 ISOR for the OHRV regulation. Data for 2005 emissions inventory obtained from ARB's OFFROAD Model. Source of population: Department of Motor Vehicles registration records.

Table 2.

1997 and Later OHRVs  
Exhaust Emission Standards  
(grams per kilometer – g/km)

Vehicle Type	Engine Displacement	HC (g/km)	CO (g/km)
Motorcycle or ATV	ALL	1.2	15

Source: Section 2412, Title 13, CCR

Many off-road motorcycle manufacturers also make on-road motorcycles, and thus had testing equipment that had been used to certify the on-road motorcycles for many years readily available for off-road motorcycle certification testing. However, many ATV manufacturers did not have comparable testing equipment at their disposal that could properly accommodate ATVs for chassis-based testing. Therefore, the Board agreed to allow industry to certify ATVs to comparable standards using a steady-state engine-based test. Table 3 shows these standards.

Table 3.

Alternate 1997 and Later ATVs  
Exhaust Emission Standards  
(grams per kilowatt-hour – g/kW-hr)

Vehicle Type	Engine Displacement (cc: cubic centimeters)	HC+NO <sub>x</sub> (g/kW-hr)	CO (g/kW-hr)
ATV	225 cc and greater	13.4	400
	Less than 225 cc	16.1	400

Source: Sections 2403 and 2412, Title 13, CCR

The effective dates for demonstrating compliance with California's exhaust emission standards were: January 1, 1997, for engine displacements greater than 90 cubic centimeters; and January 1, 1999, for engine displacements equal to or less than 90 cubic centimeters. Generally speaking, these dates coincide with the 1998 and 2000 model years, respectively. Because industry was otherwise amenable to the 1994 rulemaking, staff was confident that the manufacturers would use the three to five years of lead-time to produce a variety of emission-controlled off-road motorcycle and ATV models for the California market.

Due to limitations on the Board's authority, competition vehicles (predominantly off-road motorcycles) also remained eligible for sale in California. However, staff took measures to assure that the usage of these uncontrolled vehicles would be

restricted. Specifically, “competition/racing vehicles” were defined in the OHRV regulation as those vehicles that operated exclusively on closed courses in sanctioned racing events. Additionally, staff collaborated with the California Department of Motor Vehicles (DMV) before and after the rulemaking to make amendments to the procedure by which OHRV registration was issued.

## 2) Activity following the initial rulemaking

At the time of the regulation’s adoption, staff estimated that the emissions inventory for ROG would decrease from 37 to 4 tons per day by 2010. This reduction was predicated on two main assumptions: 1) that manufacturers would convert their product lines from uncontrolled OHRVs to emission compliant models; and 2) that the OHRV fleet population would remain relatively constant. Unfortunately, the transition to compliant models did not materialize as originally anticipated. Additionally, the population increased significantly. Therefore, as of 2005, and as noted above in Table 1, the regulation has reduced average annual ROG emissions to only 28 tons per day. The following discussion provides a more detailed explanation for the reasons behind this discrepancy, which requires an understanding of California’s longstanding program for off-highway recreation.

California’s off-highway recreation program dates back to the Chappie-Z’berg Off-Highway Motor Vehicle Law of 1971 (section 38000 et seq., California Vehicle Code (CVC)). Since then, many areas on public lands have been designated for OHRV use. The majority of these locations are managed by the California State Parks, the Bureau of Land Management (BLM), or the United States Forest Service (U.S. Forest Service), although there are riding areas under the jurisdiction of other local authorities. California law requires off-highway registration for all OHRVs that are used on public lands. The program is supported by vehicle registration fees (\$25). Registration must be renewed every two years. Proof of current registration is issued in the form of a self-adhesive sticker that is affixed to the OHRV. Because it is the dominant color (top and bottom sections), this registration sticker is commonly known as the “Green Sticker.”

Emissions Compliant  
Off-Highway Vehicle Registration



“Green Sticker”

With the 1997 implementation date of the OHRV regulation fast approaching and no noticeable changes in the OHRV manufacturer's product lines, California dealers and off-road enthusiast associations began to voice their concerns to ARB staff. Specifically, their interrelated concerns were two-fold: 1) the popular-selling two-stroke/competition OHRVs did not meet the exhaust emission standards and thus they were no longer eligible for off-highway registration, so most off-road enthusiasts would not buy them; and, 2) of the few emission compliant OHRVs that were available, none possessed performance characteristics that were satisfactorily similar to the two-stroke/competition models, which a large segment of the off-road enthusiasts desired. Moreover, some manufacturers had no emission compliant OHRVs available; thus, many dealers would lose business.

To address these unintended situations, a committee of stakeholders was formed. Comprising the committee were: the California Motorcycle Dealers Association; off-road enthusiast groups and associations, including the American Motorcyclist Association; several OHRV manufacturers; public land agency managers from the California State Parks, BLM, and the U.S. Forest Service; representatives from DMV's registration policy unit; and ARB staff.

The committee held several meetings over the course of approximately a year and a half. During the course of these meetings, it became apparent that the successful implementation of the adopted regulations was being impeded principally because of a lack of compliant motorcycles. Also during this time, staff became aware that many off-highway registrations were being issued inappropriately, as reported by public land personnel. These factors forced staff to abandon an "administrative" solution and instead pursue a regulatory solution. The committee considered various strategies to accommodate the concerns of the dealers and off-road enthusiasts, while still achieving meaningful emission reductions. The solution that was ultimately chosen accomplished this objective and was approved by the Board at the December 10, 1998 Public Hearing.

The two main elements of the 1998 rulemaking were: 1) a schedule of dates for the land agencies' OHRV riding areas, known as the "riding seasons," during which ambient ozone was low and noncomplying OHRVs could be ridden; and 2) the creation of a new form of off-highway vehicle registration. Together these measures provided for the limited use of noncomplying OHRVs, as explained below.

Because air quality in California varies, the dates of the riding areas also vary. In riding areas within air basins that are in "attainment" with the State's ambient air quality standard for ozone, both the emission compliant and noncompliant OHRVs may operate year-round. In riding areas within "nonattainment" air basins for ozone, only the emission compliant OHRVs may operate year-round. The noncompliant OHRVs are subject to riding seasons determined by analyzing historical data for ozone exceedances and considering meteorological conditions,

such as prevailing wind patterns. The intent of this provision is to allow the noncompliant OHRVs to operate when ozone levels are predictably below ambient air quality standards. [The complete list of riding areas and riding seasons is contained in section 2415, title 13, CCR.]

To enable enforcement of the riding seasons, a second off-highway registration sticker specifically for the registration of noncompliant OHRVs was created with the collaboration of DMV. Because of its color scheme, it is commonly referred to as the “Red Sticker.”

Emissions Noncompliant  
Off-Highway Vehicle Registration



“Red Sticker”

Registration with the Red Sticker is identical to the Green Sticker in terms of registration/renewal fees and renewal periods (two years). The difference is that the Red Sticker identifies an OHRV as noncompliant with California’s emission standards. This distinction is necessary to enforce the riding seasons. The riding seasons specify where and when these noncompliant vehicles may be used on designated public lands.

On July 24, 2003, the OHRV regulation was again amended to reflect the delay in riding season enforcement by the land management agencies, due to inconsistent registrations of newer vehicles. Specifically, registrations were issued inconsistently because many manufacturers incorrectly identified their noncomplying OHRVs, and there was a delay in the DMV implementation of the appropriate computer programming to process off-highway vehicle registrations. At the time of the 2003 amendments, both of these problems had been largely resolved.

Thus, the OHRV regulation as it exists today balances the needs of dealers and off-road enthusiasts with the need for emissions reductions for public health. The success of the OHRV regulation is partly reflected in the fact that air quality has not suffered and, in fact, has improved in a number of areas.

### C) Federal Regulatory Activity

In 2002, the United States Environmental Protection Agency (U.S. EPA) promulgated a federal regulation for nonroad recreational vehicles and engines. Included in this regulation were exhaust and evaporative emission standards for off-road motorcycles and ATVs.

#### 1) Exhaust Emissions

Table 4, below, highlights the differences between California and federal exhaust emission standards applicable when using the chassis-based test method.

Table 4.

California and Federal Exhaust Emission Standards  
When Using the Chassis Test  
(grams per kilometer – g/km)

Vehicle Type	California or Federal	Engine Displacement (cubic centimeters)	HC (g/km)	HC+NO <sub>x</sub> (g/km)	CO (g/km)
Motorcycle	California	ALL	1.2	—	15
	Federal	70 cc and greater	—	2.0	25
ATV	California	ALL	1.2	—	15
	Federal	100 cc and greater	---	1.5	35

Sources: Section 2412, Title 13, CCR; and the 2002: Federal Register Notice: "Control of Emissions from Nonroad Large Spark-Ignition Engines, and Recreational Engines"

Note that California has standards for HC and CO, whereas the federal standards are for HC+NO<sub>x</sub> and CO. Because the engines used in OHRVs emit much more HC than NO<sub>x</sub>, as corroborated by the emissions inventory in Table 1 above, California's HC standard is considered more stringent than the federal HC+NO<sub>x</sub> standards. California's CO standard is also more stringent than the federal CO standards.

Table 5, below, highlights the differences in exhaust emission standards for the alternative set of standards that apply when using an engine test.

Table 5.

California and Federal Exhaust Emission Standards Comparison  
 Optional (Engine-Based) Test  
 (grams per kilowatt-hour – g/kW-hr)

Vehicle Type	California or Federal	Engine Displacement (cubic centimeters)	HC+NO <sub>x</sub> (g/kW-hr)	CO (g/kW-hr)
Motorcycle	California	N/A	N/A	N/A
	Federal	Less than 70 cc	25.0	610
Large ATV	California	225 cc and greater	13.4	400
	Federal	225 cc and greater	13.4	400
Small ATV	California	Less than 225 cc	16.1	400
	Federal	100ccc – 225 cc	16.1	400
	Federal	Less than 100 cc	25.0	500

Sources: Sections 2403 and 2412, Title 13, CCR; and the 2002: Federal Register Notice: “Control of Emissions from Nonroad Large Spark-Ignition Engines, and Recreational Engines”

U.S. EPA allows smaller off-road motorcycles (<70cc) to comply using the steady-state test engine-based standards. California does not allow manufacturers to use the alternative test and standards for off-road motorcycles because: 1) it believes the transient chassis test better represents actual operation, 2) motorcycles are currently being certified using this test method, and 3) four-stroke engines are widely available for these smaller motorcycles which can easily meet the chassis-based standards.

Both California and U.S. EPA allow any size ATV to comply with the alternative engine-based standards and nearly all manufacturers elect to do so, primarily for cost reasons. However, U.S. EPA requires less stringent exhaust emission standards for ATVs with engine displacements less than 100 cc. The standards they have adopted are the same as the standards for non-handheld small off-road engines (SORE). These standards are not needed because a full line of small ATVs meeting the more stringent California standards is available.

## 2) Evaporative Emissions

The recent federal regulation contains evaporative emission standards aimed at controlling losses due to permeation from fuel tanks and hoses. California has no comparable standards. Compared to uncontrolled levels, the federal regulation requires an 85-percent reduction in plastic fuel tank permeation and a 95-percent reduction in fuel system hose permeation. The standards, which will take effect in 2008, are shown in Table 6 below.

Table 6.

Federal Evaporative Emission Standards  
(grams per meter-squared per day –  $g/m^2/day$ )

Emission Component	Standard
Fuel Tank Permeation	1.5 $g/m^2/day$
Fuel Hose Permeation	15.0 $g/m^2/day$

Source: 2002: Federal Register Notice: "Control of Emissions from Nonroad Large Spark-Ignition Engines, and Recreational Engines"

## 3) "ATV-like" Utility Vehicles

Utility vehicles are typically small, low-speed off-road vehicles, commonly seen on college campuses carrying miscellaneous supplies and equipment. In California, these vehicles are required to comply with requirements based on the horsepower of the engine. Vehicles with engines less than 25 horsepower are certified based on meeting the SORE regulation, while those above 25 horsepower are certified based on meeting the large spark-ignition (LSI) engines regulation. Historically, these vehicles generally have not used ATV or off-road motorcycle engines and have not been characterized as "ATV-like" vehicles. However, a recent trend has emerged with the introduction of utility vehicles which are more "ATV-like," as in the example described below.

In the federal regulation, these utility vehicles now certify according to the same standards and test procedures as ATVs. Differences between these vehicles and traditional ATVs include bench or bucket seats versus straddled seating, a steering wheel versus handlebars, and heavier cargo carrying capacities. The images below illustrate some of the more obvious distinctions between ATVs and certain ATV-like utility vehicles. Staff is proposing to partially align with the new federal definitions to accommodate these vehicles.

## ATV and Utility Vehicle Comparison



All-Terrain Vehicle (ATV)



ATV-Like Utility Vehicle

### III. SUMMARY OF RECOMMENDED ACTION

#### ***A) Applicability***

The regulatory proposal is primarily directed at off-road motorcycles and ATVs, although certain types of utility vehicles are also affected.

#### ***B) Evaporative Emission Standards***

The proposed evaporative emission standards control permeation losses from fuel tanks and fuel hoses, and would apply to new 2008 and subsequent OHRVs. By adopting these standards and test procedures, California would harmonize with the federal requirements, allowing ARB to enforce the standards and requirements. The proposed evaporative standards and the associated temperatures for evaporative testing are as follows in Table 7:

Table 7.

Proposed Evaporative Emission Standards  
(grams per meter-squared per day – g/m<sup>2</sup>/day)

<b>Emission Component</b>	<b>Standard</b>	<b>Test Temperature</b>
Fuel Tank Permeation	1.5 g/m <sup>2</sup> /day	28° C (82° F)
Fuel Hose Permeation	15.0 g/m <sup>2</sup> /day	23° C (73° F)

Several technologies are available to manufacturers to control evaporative permeation losses. As outlined in U.S. EPA's Final Regulatory Support Document, these technologies include barrier platelets, sulfonation treatment, fluorination treatment, and barrier fuel hose. A discussion of the cost of these technologies is presented in Part IV of this report.

### **C) ATVs and ATV-Like Utility Vehicles**

Since the time the Board first adopted the OHRV regulation, ATVs have evolved into much larger and specialized vehicles, with features that no longer meet the existing ATV definition. Some of the features found on new ATVs include:

- seating for two persons (i.e., the operator plus one passenger)
- cargo capacities that exceed 350 pounds
- vehicles with six wheels
- unladen vehicle weight in excess of 600 pounds.

Staff proposes to revise the ATV definition into three categories, or classes, that include these new features and better distinguish today's ATVs.

Class I: ATVs designed to travel on four or more low-pressure tires, having a seat designed to be straddled by the operator and handlebars for steering controls, and intended for use by a single operator and no other passengers.

Class II: The same features as Class I ATVs, but having straddle seating for one operator and one passenger.

Class III: An off-road utility vehicle that has four or more wheels, has bench or bucket seating for two or more persons, is designed for operation over rough terrain, has either a rear payload 350 pounds or more or seating for six or more passengers, has an engine displacement less than or equal to one liter, maximum brake power less than or equal to 30 kilowatts, and is capable of speeds over 25 miles per hour.

With the creation of these three ATV "Classes," staff proposes amending the definition of "Off-Highway Recreational Vehicle Engines" or "Engines" in section 2411, title 13, CCR, to remove unnecessary language within it. Manufacturers have questioned whether the existing language exempts certain ATV-like utility vehicles from the LSI regulation. However, those utility vehicles are proposed for coverage under the new ATV Class III definition; therefore, the phrase "...*but not limited to use in...*" is no longer at issue. Removing it and adding the Class III definition will clarify the applicability of the OHRV regulation.

Since the promulgation of the federal regulation, some utility vehicle manufacturers have asked California to harmonize with the federal requirements, which require utility vehicles meeting the Class III definition (above) to certify to

the federal ATV standards. In California, utility vehicles have been required to comply with exhaust emission standards for LSI engines, or the exhaust standards for small engines typically used in lawn and garden equipment (i.e., SORE). Table 8, below, shows the exhaust emission standards for both; note that the federal ATV standard for HC+NO<sub>x</sub> is less stringent than the California LSI/SORE standard.

Table 8.

Utility Vehicle Exhaust Emission Standards  
(grams per kilowatt-hour – g/kW-hr)

<b>Vehicle Type</b>	<b>California or Federal</b>	<b>Engine Displacement</b> (cubic centimeters)	<b>HC+NO<sub>x</sub></b> (g/kW-hr)	<b>CO</b> (g/kW-hr)
Utility Vehicle	California LSI/SORE	Less than 1 liter	12.0	549
	Federal ATV	Less than 1 liter	13.4	400

Because many of the utility vehicles that are eligible to certify to the federal ATV standards use the same engines that are installed in ATVs, and recognizing the cost to manufacturers of testing an otherwise identical engine according to two different test procedures, staff proposes harmonizing insofar as allowing Class III utility vehicles to certify using the ATV test procedure. The proposal would also harmonize California's less stringent CO standard with that of U.S. EPA's (i.e., 400 g/kW-hr). However, because of the potential loss of emission reductions if compliance with the less stringent federal standard for HC+NO<sub>x</sub> were allowed, staff proposes to maintain the more stringent California standard, as shown in Table 9, below.

Table 9.

2007 and Later: ATV Class III  
Exhaust Emission Standards  
(grams per kilowatt-hour – g/kW-hr)

<b>Vehicle Type</b>	<b>Engine Displacement</b> (cubic centimeters)	<b>HC+NO<sub>x</sub></b> (g/kW-hr)	<b>CO</b> (g/kW-hr)
ATV Class III	Less than 1 liter	12.0	400

Additionally, the staff proposal makes off-highway vehicles meeting the ATV Class III definition ineligible for emissions noncompliant certification or Red Sticker registration. Unlike off-road motorcycles, the federal regulation does not

make exemptions for the sale of competition ATVs to the general public; and by 2007, the federal regulation will require all ATVs to meet exhaust emission standards. Because manufacturers are already complying with the proposed levels using four-stroke technologies, California has little reason to explore a less protective noncompliant certification option for this category. Moreover, noncompliant certification is unnecessary since these vehicles are already meeting LSI emission standards.

#### ***D) Labeling Requirements***

Dating back to the initial 1994 OHRV rulemaking, the labeling requirements for OHRVs were specified in section 2413, title 13, CCR. These requirements are based on, and reference, the labeling requirements applicable to on-road motorcycles, contained in section 1965, title 13, CCR, and the incorporated document entitled: "California Motor Vehicle Emission Control and Smog Index Label Specifications."

At a December 12, 2002 Public Hearing, the Board approved revisions to section 1965 and the incorporated "Specifications" as they relate to on-road motorcycles. Specifically, since 2004, on-road motorcycles have been following the federal labeling requirements. Many manufacturers of on-road motorcycles also manufacture OHRVs. Although the incorporated documents remained in effect for OHRVs and manufacturers have continued to comply, industry had uncertainty about the applicability of the "Specifications" document for the OHRV labeling requirements. The staff's proposal would insert into section 2413 the labeling requirements that were previously contained in the "Specifications" and incorporated by reference.

#### ***E) Adjustments to Riding Seasons***

The 1998 rulemaking made provisions for the Executive Officer to periodically review the riding season schedule and make adjustments and revisions, if warranted. Since riding seasons became effective, staff has received feedback from both the land agencies and off-road enthusiasts. One common theme throughout has been the desire for a more uniform schedule of dates, particularly for those areas that are near other areas or between areas that are connected by common trails. With this in mind, staff has analyzed recent ozone data and revised the riding season schedule accordingly. Although changes to the riding seasons can be made by the Executive Officer with proper notice, staff has opted to include this amendment with this rulemaking.

The majority of riding areas are under the jurisdiction of the U.S. Forest Service. Because of the numerous connecting and adjacent riding areas, these riding seasons are proposed for consolidation for each particular ranger district, with each district having one riding season that applies throughout. For the most part, riding areas under the jurisdiction of the California State Parks or BLM do not

connect with other areas. However, in cases where they do, the proposed riding seasons are uniform between neighboring areas, as in the case of Hungry Valley (State Parks) and the Mt. Pinos Ranger District (U.S. Forest Service). Similar efforts at making uniform riding areas are proposed for western Imperial County, where State Parks and BLM riding areas are in close proximity.

Although none of the proposed riding season changes were due to the reclassification of an air basin’s ozone status from nonattainment to attainment, there are a few additional areas staff proposes be amended to year-round status. Some of these riding areas were not known to staff and were located in an attainment area, such as riding areas in the Nevada City and American River Ranger Districts. Others are existing riding areas whose actual location has been clarified to be either in an attainment area, like Mammoth Bar, or to be located at or near the California-Arizona or California-Nevada border and with which the year-round riding season would not impact air quality, such as riding areas in the Imperial Sand Dunes. Also, to address a misinterpretation of the riding season program, the regulatory language has been amended to clarify that riding in these public lands is limited to only those areas that are designated for OHRV usage.

Lastly, within section 2415, the Governor’s Executive Order (W144-97) review provision has been deleted both because it expired by operation of law and because the 2003 OHRV rulemaking fulfilled its requirement.

#### **IV. AIR QUALITY, ENVIRONMENTAL AND ECONOMIC IMPACTS, ENVIRONMENTAL JUSTICE**

##### ***A) Air Quality Benefits***

A summary of the benefits from the regulatory proposal is shown in Table 10, below. The emission reductions were determined by assuming the same amount of permeation control that the federal regulation requires. By 2020, the proposal would provide a reduction of 4.5 tons per day of reactive organic gases.

Table 10.

Statewide Evaporative Emission Benefits  
Reactive Organic Gases  
(tons per day)

<b>Year</b>	<b>Vehicle Type</b>	<b>Baseline</b>	<b>Controlled</b>	<b>Benefit</b>
2010	Motorcycle	8.62	7.50	1.18
	ATV	6.38	5.73	0.65
<b>TOTAL</b>	—	15.00	13.23	<b>1.83</b>
2020	Motorcycle	11.33	8.61	2.72

	ATV	8.34	6.60	1.74
TOTAL	—	19.67	15.21	<b>4.46</b>

No other emission benefits are expected as a result of staff's other proposed amendments. That is, including the utility vehicles that qualify as Class III ATVs into this regulation at the proposed standards will preserve expected exhaust emission reductions from these vehicles.

The revisions to the riding seasons result in more riding opportunities for off-road enthusiasts; therefore, there will be a minor ROG increase to the emissions inventory. However, because these additional riding opportunities occur when ozone levels are expected to be below the ambient air quality standards, the increase will not significantly impact nonattainment air basins.

### **B) CEQA Analysis**

The California Environmental Quality Act (CEQA) and ARB policy require an analysis to determine the potential adverse environmental impacts of proposed regulations. Because the ARB's program involving the adoption of regulations has been certified by the Secretary of Resources (see Public Resources Code section 21080.5), the CEQA environmental analysis requirements are allowed to be included in the ARB Staff Report or Technical Document in lieu of preparing an environmental impact report or negative declaration. In addition, the ARB will respond in writing to all significant environmental points raised by the public during the public review period or at the Board hearing. These responses will be contained in the Final Statement of Reasons for the proposed amendments to the regulations.

Public Resources Code section 21159 requires that the environmental impact analysis conducted by ARB include the following: (1) an analysis of the reasonably foreseeable environmental impacts of the methods of compliance, (2) an analysis of reasonably foreseeable feasible mitigation measures, and (3) an analysis of reasonably foreseeable alternative means of compliance with the regulations.

The staff's proposal lists additional riding opportunities for noncomplying OHRVs, which could theoretically present the opportunity for more emissions in certain locations. However, statewide, and particularly in nonattainment areas, the proposed revisions to the riding seasons will make enforcement of the riding restrictions more efficient than before, and in some cases will allow for enforcement to reduce emissions in areas currently used for riding with no restrictions. Together, this will reduce incidences of inappropriate usage of noncomplying OHRVs during periods of high ozone levels and more than offset any potential local emission increases. Also, any potential increases in emissions will be further offset by the reductions from the proposed evaporative standards. Additionally, the regulatory clarification that riding is to be done *only*

in designated riding areas protects other media that would be otherwise impacted by inappropriate OHRV use.

Because this regulatory proposal identifies no new potentially significant environmental effects, it would not have any significant or potentially significant negative effects on the environment. Therefore no alternatives or mitigation measures are proposed to avoid or reduce any significant effects on the environment.

### **C) Costs to Industry**

Because of its harmonizing aspects, the staff proposal is not expected to impose costs on industry. Although the California standards will be more stringent than the federal standards for the utility vehicles that meet the proposed ATV Class III classification, the proposal provides manufacturers a harmonized test method for demonstrating compliance. Moreover the California standards are at levels they are currently meeting. Therefore, the proposal will likely result in savings for the manufacturers, not costs.

California’s harmonization with the evaporative standards would not impose additional costs above the costs to comply with the federal regulation, which would apply in California in the absence of an ARB requirement. Therefore, staff believes that the regulatory proposal would have no noticeable impact on business competitiveness, California employment, or on business creation, elimination, and expansion.

Table 11, below, contains U.S. EPA’s analysis of the incremental costs for OHRV manufacturers to meet the federal evaporative emission standards.

Table 11.

#### Permeation Control Technologies and Incremental Costs

<b>Technology Option</b>	<b>Off-Road Motorcycles</b> <i>3 gallon tank 1.5 feet hose</i>	<b>ATVs</b> <i>4 gallon tank 1 foot hose</i>
Barrier Platelets	\$1.20	\$1.50
Sulfonation Treatment	\$1.20	\$1.20
Shipping/Handling	\$0.22	\$0.30
Fluorination	\$2.42	\$3.23
Shipping/Handling	\$0.22	\$0.30
Barrier Fuel Hose	\$1.16	\$0.77
Hose Clamps	\$0.52	\$0.52

The costs industry would incur to maintain a separate line of OHRVs for California with uncontrolled fuel system components would exceed the incremental costs listed above because it would involve additional labor to remove and replace the low-permeation tanks and hoses on “American-bound” product, as well as the effort to manage the accurate distribution of an uncontrolled, “California-only” product.

#### ***D) Costs to State Agencies***

Staff believes there would be no real incremental cost increase associated with adopting the federal evaporative standards as the California standards. Any ARB compliance testing performed would be done with existing resources. Accordingly, the proposed requirements are not expected to result in an overall increase in costs for state and local agencies. The revisions to the riding seasons may result in cost savings because the more uniform riding season schedule is expected to simplify enforcement duties for land agency personnel.

#### ***E) Cost-Effectiveness***

The cost-effectiveness of the federal evaporative emission standard was determined by U.S. EPA to be about \$0.11 per pound of ozone precursors reduced, which compares favorably with the cost-effectiveness of California mobile source and motor vehicle fuels regulations adopted over the past decade. Compared to the existing California OHRV regulation for exhaust emissions, which was determined to be \$0.03-0.35 per pound for HC and \$0.03-0.31 for CO in 1994, aligning with the federal proposal for evaporative emissions is an equally cost-effective control measure.

#### ***F) Economic Impact on the Economy of the State***

Because there is no cost associated with the evaporative emission standards and utility vehicle requirements, no negative impact on the economy of the state is expected. At the retail level, California dealers will not be at a disadvantage compared to the rest of the country because the evaporative requirements in this proposal are identical to the federal requirements. However, because of the revisions to the riding seasons, dealers may experience increased sales.

#### ***G) Environmental Justice***

The environmental justice implications of the regulatory proposal remain unchanged from the existing regulation. OHRVs typically are not used in or near environmental justice communities. Because the Red Sticker program ensures that higher-polluting OHRVs are not used when ambient air quality exceeds the standards for ozone, all California communities share the benefits.

## **V. OUTREACH**

Shortly after the federal regulation was promulgated in 2002, there was a noticeable increase in stakeholder activity, including numerous meetings and correspondence regarding harmonizing utility vehicles to the ATV standards in the same fashion as the federal regulation, requests to harmonize completely with the federal regulation, and recommendations to revise the riding seasons. Additional meetings between staff, industry, and off-road enthusiasts were held to identify possible solutions. These efforts lead to a Public Workshop held in El Monte on March 23, 2006. Attending were members from industry, off-road enthusiast groups, and the public land agencies. At the workshop, staff summarized the amendments that would be proposed to the Board. These amendments included adopting evaporative emission standards that harmonize with the federal standards, revising the riding season schedule for noncomplying vehicles, and inserting into title 13, CCR the labeling requirements that were previously incorporated by reference. Staff also informed industry about additional evaporative control measures for OHRVs, which staff is in the process of evaluating for a possible future regulatory action. After the workshop, staff provided interested parties with the data that was analyzed for determining the revisions to the riding seasons. Recipients were asked for their comments and suggestions.

## **VI. ALTERNATIVES**

### ***A) Harmonize with the federal exhaust emission standards***

Staff considered harmonizing with the federal exhaust emission standards as an alternative to this proposal, but rejected it because it would increase emissions compared to the proposed amendments. Manufacturers have suggested that aligning with the federal exhaust emission standards would provide California dealers more off-road motorcycle models to sell, which would reduce the off-road enthusiasts' frustration of having to abide by riding season limitations. The following discussion will explain staff's reasons for rejecting exhaust emission harmonization as an alternative.

#### **1) Off-Road Motorcycles**

When ARB determined the exhaust emission standards for OHRVs in 1994, it first averaged the emissions from a sample of 1990 four-stroke OHRVs. A standard was then adopted that reflected emission control strategies that had proved successful with on-road motorcycles; such as more precise fuel metering, and engine and cooling modifications. A comparison of the uncontrolled

emissions, California's adopted emission standards, and the federal emission standards are shown in Table 12, below:

Table 12.

Uncontrolled and Controlled OHRV Exhaust Emissions Comparison  
(grams per kilometer – g/km)

OHRV Emissions	HC (g/km)	CO (g/km)
1990 Uncontrolled	1.5	32.0
1994 California Standards	1.2	15.0
2002 Federal Standards	1.7*	25.0

\* Assumes 0.3 g/km for NO<sub>x</sub> emissions

Since 1997, emissions-compliant off-road motorcycles have certified to levels between 0.5 and 1.0 g/km for HC and between 5 and 12 g/km for CO. Thus, manufacturers have demonstrated that California’s standards are indeed achievable, often by comfortable margins. The primary complaint against the emission-compliant off-road motorcycles is that they do not exhibit the same performance characteristics as do the two-stroke models or the high-performance, but noncomplying, four-stroke models. U.S. EPA tested a number of these uncontrolled high-performance four-strokes. The emission levels they measured are listed in Table 13, below:

Table 13.

Uncontrolled, High-Performance Four-Stroke Off-Road Motorcycles  
Exhaust Emissions Comparison  
(grams per kilometer – g/km)

Make	Model	Model Year	Engine Displacement.	HC (g/km)	CO g/km)	NO <sub>x</sub> (g/km)
Yamaha	WR250F	2001	249 cc	1.46	26.74	0.110
Yamaha	WR450F	1999	398 cc	1.07	20.95	0.155
KTM	400EXC	2001	398 cc	1.17	28.61	0.050
Husaberg	FE501	2001	498 cc	1.30	25.81	0.163
Average				<b>1.25</b>	<b>25.52</b>	<b>0.109</b>

Source: 2002: “Final Regulatory Support Document: Control of Emissions from Unregulated Nonroad Engines” – U.S. EPA.

On average, the HC emissions from these motorcycles are very close to California’s standards. The CO emissions are above compliance levels; however, both HC and CO are correctable with better calibrations and other improvements.

Because manufacturers have been able to produce emission-compliant models, and because the emissions from uncontrolled four-stroke models are very close to compliance levels, maintaining the existing HC emission standards remains the reasonable and environmentally-responsible emission standard for California. Although harmonizing with U.S. EPA's 2.0 g/km HC+NO<sub>x</sub> standard would seemingly ensure that all four-stroke models would be eligible for certification, such a standard does not demonstrate an effort to reduce emissions from existing, uncontrolled four-stroke engines.

## **2) ATVs**

Similarly, U.S. EPA tested 11 four-stroke ATVs (see Table 14, below). Although ATVs currently certify to the engine-based emission standards, the 11 ATVs were tested under the chassis-based test cycle because U.S. EPA wanted to determine whether these vehicles were capable of following the driving schedule. In their rulemaking, U.S. EPA expressed concerns about the representativeness of the existing engine-based test cycle, which they will phase-out in 2010. Efforts by industry to create a suitable, replacement engine-based test cycle are in progress; however, there is uncertainty as to the completion date of the project. In the event a replacement test cycle does not materialize, ATVs would be subject to the same chassis-based exhaust emission standards and test procedures as the off-road motorcycles.

The 1.5 g/km HC+NO<sub>x</sub> standard in the federal regulation for ATVs is essentially equivalent to California's 1.2 g/km HC standard, but the federal 35 g/km CO standard is much less stringent. U.S. EPA agreed with industry that a stringent CO standard could make it more difficult to meet the HC+NO<sub>x</sub> standard. However the emission data generated by U.S. EPA showed that this was not always the case. Those engines with the lowest CO emissions (highlighted in *italics*) are often the ones with the lowest HC+NO<sub>x</sub> emissions.

Table 14.

ATV Exhaust Emissions Comparison  
(grams per kilometer – g/km)

Make	Model	Model Year	Engine Displacement.	HC (g/km)	CO (g/km)	NO <sub>x</sub> (g/km)
<i>Kawasaki</i>	<i>Bayou</i>	<i>1989</i>	<i>280 cc</i>	<i>1.17</i>	<i>14.09</i>	<i>0.640</i>
Honda	300EX	1997	298 cc	1.14	34.60	0.155
Polaris	Trail Boss	1998	324 cc	1.56	43.41	0.195
<i>Yamaha</i>	<i>Warrior</i>	<i>1998</i>	<i>349 cc</i>	<i>0.98</i>	<i>19.44</i>	<i>0.190</i>
Polaris	Sportsman	2001	499 cc	2.68	56.50	0.295
Arctic Cat	375 Auto	2001	375 cc	1.70	49.70	0.190
Yamaha	Big Bear	2001	400 cc	2.30	41.41	0.170
Honda	Rancher	2001	400 cc	1.74	33.98	0.150
Bombardier	4x4 AWD	2001	500 cc	1.62	20.70	0.740
<i>Polaris</i>	<i>Sportsman</i>	<i>2001</i>	<i>499 cc</i>	<i>1.56</i>	<i>19.21</i>	<i>0.420</i>
<i>Yamaha</i>	<i>Raptor</i>	<i>2001</i>	<i>660 cc</i>	<i>0.97</i>	<i>16.56</i>	<i>0.210</i>
Average				<b>1.58</b>	<b>31.78</b>	<b>0.305</b>

Source: 2002: "Final Regulatory Support Document: Control of Emissions from Unregulated Nonroad Engines" – U.S. EPA.

As argued above, staff believes that the emission standards should be set to levels that result in emission reductions, not at levels reflecting the status quo. Moreover, the standards should not be skewed unnecessarily upward because of a small number of poorly calibrated models.

### 3) Exhaust Emissions Inventory Analysis

Staff considered this complete harmonization alternative thoroughly, but has determined that the current exhaust emission standards in the OHRV regulation achieve more reductions of ozone-forming emissions than would be achieved with the federal standards. Moreover, there would be a significant increase in CO emissions, due to the great differences between the California and federal standards. Table 15, below, compares the emissions inventory and shows the increases that would occur with the federal standards. At this time, staff has not identified an alternative that would be more effective in achieving the goal of expanding riding opportunities and product selection without harming air quality.

Table 15.

Emissions Impact of Full Harmonization with U.S. EPA Standards  
(tons per day – annual)

<b>Year</b>	<b>Standards</b>	<b>HC</b>	<b>CO</b>	<b>NO<sub>x</sub></b>
2010	California	28.0	60.2	0.5
	<i>Federal</i>	29.7	77.5	0.5
<b>INCREASE</b>	—	<b>1.7</b>	<b>17.3</b>	—
2020	California	38.4	82.8	0.7
	<i>Federal</i>	40.8	106.4	0.7
<b>INCREASE</b>	—	<b>2.4</b>	<b>23.6</b>	—

Additionally, the Red Sticker program, with its riding seasons, better serves California's air quality needs than would the federal regulation. The primary intent of the OHRV regulation was to reduce ozone-forming emissions. With OHRV engines, these are primarily HC or ROG emissions. By restricting the usage of the noncomplying OHRVs during the summer months, when ozone levels are highest, significant ROG emission reductions are achieved.

Bearing in mind that OHRVs are most often used on weekends, staff conducted a statewide analysis comparing the summer weekend day emissions inventory for 2010, as shown in Table 16, below. Staff's analysis was done on a statewide basis because data regarding the number of OHRVs operating at each riding area is not available. Thus, the analysis slightly overestimates the benefits of the Red Sticker program, as it assumes that noncomplying OHRVs would not be operated, even at those riding areas that allow year-round riding. However, the directional effect of the program is clear.

Table 16.

2010 Summer Weekend Day Impact of Red Sticker Program  
(tons per day)

<b>Scenario</b>	<b>ROG</b>	<b>CO</b>	<b>NO<sub>x</sub></b>
Unlimited Riding	39.44	129.49	1.52
Restricted Riding	2.76	70.17	1.51
<b>Emission Reductions</b>	<b>36.68</b>	<b>59.32</b>	<b>0.01</b>
<b>Percent Reductions</b>	<b>93%</b>	<b>46%</b>	<b>&lt;1%</b>

What can be gleaned from this analysis is that in riding areas with restrictions on noncomplying OHRVs, the ROG emissions are reduced very significantly during periods of high ozone. These emissions reductions would be forfeit if California harmonizes with the federal program.

### ***B) Propose more stringent exhaust emission standards***

This proposal is focused on addressing near term issues and assuring that California realizes the full benefits of the recently adopted federal evaporative emission standards. Staff has not completed an evaluation on the feasibility or viability of more stringent exhaust or evaporative emission standards for OHRVs, and thus has not proposed more stringent requirements as part of this proposal.

Staff intends to do further evaluation of more stringent standards in the near future. Upcoming State Implementation Plan revisions are expected to reaffirm the need for additional emission reductions. OHRVs do not utilize catalytic converters, a technology used on nearly all other spark ignited engines. In addition, the evaporative emission requirements adopted by U.S. EPA do not include control of diurnal emissions, and thus there is the potential for further evaporative emission reductions. Based on staff's evaluation, additional requirements for OHRVs and other similar vehicles and/or engines may be proposed in the future.

### ***C) "No action" alternative***

If no action were taken to amend the OHRV regulation, ARB would not be able to enforce the evaporative emission standards in California if noncompliance was determined. Additionally, by not revising the riding seasons, enforcement of the riding restrictions in the Red Sticker program would continue to be unnecessarily burdensome for public land personnel in those locations where riding areas with different riding seasons have connecting trails, and the off-road enthusiasts can repeatedly travel from unrestricted to restricted riding areas.

## **VII. ISSUES OF CONTROVERSY**

The most prominent controversy related to the OHRV regulation is the Red Sticker program, with its usage restrictions imposed upon noncomplying, high-emitting OHRVs. Since 2003, the off-road community has engaged in high-volume letter writing campaigns to the Governor and the Chair of the Board seeking a repeal of the restrictions. Understood in its proper context, however, the Red Sticker program is actually a generous compromise that has been extended by the Board. The opportunity to purchase and operate a noncomplying vehicle in California is unique to the OHRV regulation.

Had the Board not adopted the Red Sticker program, the purchase and use of noncomplying high performance motorcycles would have ceased. The only other alternative would have been to repeal the emission standards for OHRV motorcycles, with a substantial loss of the 33 tons per day of ROG emission reductions noted in the 1994 rulemaking. Staff believes repeal would be unacceptable, and that the Red Sticker program that allows operation of uncontrolled OHRVs during months without ozone pollution remains the best alternative, balancing the desires of riders and the need to reduce the health effects of air pollution in California.

## **VIII. SUMMARY AND CONCLUSIONS**

The regulatory proposal addresses near-term issues, and will lead to improved implementation of the OHRV regulation. The addition of evaporative standards to the OHRV regulation will reduce ozone-forming emissions, as well as provide the foundation for subsequent evaporative control measures. The inclusion of eligible utility vehicles into the OHRV regulation reduces the manufacturers' testing burden without compromising emission reductions. Lastly, the revisions to the riding seasons will allow additional riding and result in a program that operates more efficiently.

Staff recommends that the Board approve this regulatory proposal. The proposal described herein would facilitate enforcement of a program in place. No alternative considered by the agency would be more effective in carrying out the purpose for which the regulations are proposed or would be as effective or less burdensome to affected private persons than the proposed alternative.

## **IX. REFERENCES**

- ARB 1994. Staff Report: "Public Hearing to Consider the Adoption of Regulations Regarding California Exhaust Emission Standards and Test Procedures for Off-Highway Recreational Vehicles and Engines"
- ARB 1998. Staff Report: "Public Hearing to Consider Amendments to the California Regulations for New 1997 and Later Off-Highway Recreational Vehicles and Engines"
- ARB 2003: Staff Report: "Public Hearing to Consider Amendments to the California Regulations for New 1997 and Later Off-Highway Recreational Vehicles and Engines"
- U.S. EPA 2002: Federal Register Notice: "Control of Emissions from Nonroad Large Spark-Ignition Engines, and Recreational Engines (Marine and Land Based)"
- U.S. EPA 2002: "Final Regulatory Support Document: Control of Emissions from Unregulated Nonroad Engines"