State of California
AIR RESOURCES BOARD

Staff Report: Initial Statement of Reasons
for Proposed Rulemaking

PUBLIC HEARING TO CONSIDER AMENDMENTS TO THE EMISSION CONTROL REGULATIONS FOR 1995 AND LATER UTILITY AND LAWN AND GARDEN EQUIPMENT ENGINES

Date of Release: December 8, 1995
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Agenda Item No.: [96-__-__]

I. INTRODUCTION

On or about July 26, 1995, the Briggs & Stratton Corporation, a manufacturer of utility and lawn and garden equipment engines (utility engines), submitted a petition to the Air Resources Board ("ARB" or "Board"), under Government Code section 11340.6 requesting that the Board amend the emission standards for utility engines under 25 horsepower. (Title 13 California Code of Regulations [CCR] section 2403).[1] Specifically, the petition calls for amending the carbon monoxide (CO) standard from 300 grams per brake horsepower-hour (g/bhp-hr) to 350 g/bhp-hr for Class I and II utility engines. Class I engines are less than 225 cubic centimeters (cc) displacement and Class II engines are greater than or equal to 225 cc displacement. In response to the petition, the staff is recommending that the Board approve the amendments to the California utility engine regulations.

II. BACKGROUND

The ARB was granted the authority to regulate off-road mobile sources of emissions in the California Clean Air Act (CCAA) of 1988 as codified in the Health and Safety Code Sections 43013 and 43018. Included in the off-road category are utility engines.

The utility engine regulations were originally approved for adoption by the Board in December 1990, and were formally adopted on March 20, 1992. The utility engine regulations included two levels of exhaust emission standards, Tier I and II, and provisions for emission test procedures, engine labeling, warranty, and compliance programs. Tier I standards were to apply to engines produced from January 1, 1994, to December 31, 1998, while Tier II standards apply to engines produced on or after January 1, 1999. Among other things, the Tier I carbon monoxide (CO) standard of 300 g/bhp-hr was established. Upon consideration of a petition filed by industry, the ARB amended the regulations in April 1993 to delay implementing the regulations for one year, making the regulations applicable to engines produced on or after January 1, 1995.

In May 1994, under authority granted in Title II of the 1990 Amendments to the federal Clean Air Act, the United States Environmental Protection Agency (U.S. EPA) proposed new emission standards and test procedures for small utility engines. In the proposed rule, the U.S. EPA proposed hydrocarbon (HC) plus oxides of nitrogen (NOx), and CO standards similar to those previously adopted by the ARB. The U.S. EPA released their final rule on utility engines in July 1995 [40 Code of Federal Regulations (CFR) Parts 9 and 90, 60 Federal Regulations 34582 (July 3, 1995)]. In this rule, the U.S. EPA determined that the lowest technically feasible CO standard for Class I and II utility engines to be 469 grams per kilowatt-hour (or equivalently, 350 g/bhp-hr) utilizing Indolene fuel for certification testing.

Subsequently, Briggs and Stratton submitted a petition to the ARB requesting that the California utility engine regulations be amended ostensibly to be consistent with the CO standards for Class I and II utility engines established by the U.S. EPA. Although numerically equivalent, the proposed amendment to the ARB CO standard differs from the U.S. EPA CO standard. The deviation involves the use of different test fuels when a manufacturer is conducting certification testing. The U.S. EPA certification test procedures require the use of a certain gasoline test fuel commonly referred to as Indolene. The California certification test procedures, as adopted on March 20, 1992, requires a test fuel which is consistent with the specifications outlined in the "California Exhaust Emission Standards and Test Procedures for 1988 and Subsequent Model Passenger Cars, Light-Duty Truck, and Medium-Duty Vehicles." Accordingly, the California certification test procedures allow the use of either Indolene or reformulated gasoline which emits less CO and HC emissions when combusted. Consequently, if adopted, the proposed California CO standard of 350 g/bhp-hr for Class I and II utility engines will not be equivalent, but in fact, be less stringent than the 350 g/bhp-hr Class I and II utility engine CO standard as adopted by the U.S. EPA.

The reasons and justifications in support of the petition are set forth below in Section IV.

III. SUMMARY OF RECOMMENDED ACTION

Staff recommends modifications to the CO emission standards for Class I and II utility engines. Table 1 shows the current emission standards for Class I and II utility engines. Table 2 shows the proposed modifications to the CO standard from 300 g/bhp-hr to 350 g/bhp-hr (in bold and underlined).

Table 1

Current Exhaust Emission Standards for Class I & II Utility Engines
(g/bhp-hr)

Calendar Year	Engine Class	Hydro-carbon	Oxides of Nitrogen	Carbon Monoxide	Particulate
1995 to 1998 (Tier I)	I (< 225 cc)	-- 12.0 Total --		300	0.9*
	II (≥ 225 cc)	-- 10.0 Total --		300	0.9*
1999 and later (Tier II)	I and II	-- 3.2 Total --		100	0.25**

* Applicable to all diesel cycle engines.
** Applicable to all diesel cycle, and all two-stroke engines.

Table 2

Proposed Modifications (indicated in bold and underline) to Exhaust Emission Standards for Class I & II Utility Engines
(g/bhp-hr)

Calendar Year	Engine Class	Hydro-carbon	Oxides of Nitrogen	Carbon Monoxide	Particulate
1995 (Tier I)	I (< 225 cc)	-- 12.0 Total --		300	0.9*
	II (≥ 225 cc)	-- 10.0 Total --		300	0.9*
1996[2] to 1998 (Tier I)	I (< 225 cc)	-- 12.0 Total --		**350**	0.9*
	II (≥ 225 cc)	-- 10.0 Total --		**350**	0.9*
1999 and later (Tier II)	I and II	-- 3.2 Total --		100	0.25**

* Applicable to all diesel cycle engines.
** Applicable to all diesel cycle, and all two-stroke engines.

IV. DISCUSSION

To date, Briggs and Stratton has not certified two of their largest selling lawnmower engines, the Models 9 and 12, to the California Class I 300 g/bhp-hr CO standard for utility engines in which the use of either Indolene test fuel or reformulated gasoline is allowed. Citing technical infeasibility and potential adverse economical impact, Briggs and Stratton submitted a petition to the ARB requesting an amendment of the Class I CO standard to relax the current 300 g/bhp-hr limit to 350 g/bhp-hr. Lawnmower engines alone represent almost half of the utility engine population which also includes garden tillers, leaf blowers, lawn edgers, chain saws, etc.

According to Briggs and Stratton, the engine Models 9 and 12 account for approximately sixty percent of total annual lawnmower engine sales in California. This amounts to approximately 225,000 lawnmower engines out of the estimated total of 375,000 lawnmower engines sold in California. The Models 9 and 12 are popular Class I engines primarily due to their low cost. Model 9 powered lawnmowers are priced as low as $100 in some retail stores. The petition also requested relaxing the current Class II CO standard from 300 g/bhp-hr to 350 g/bhp-hr. Briggs and Stratton did not provide specific reasons for adjusting the Class II CO standard.

A. PETITION

The petition submitted by Briggs and Stratton included the following reasons for amending the CO standard from 300 g/bhp-hr to 350 g/bhp-hr:

1. Since the Board adopted the emission standards for utility engines in December 1990, new information has become available regarding the technical feasibility of the CO standard. Briggs and Stratton asserts that because of technical difficulties experienced by the engine Models 9 and 12 with in-use performance when calibrated to meet the 300 g/bhp-hr CO standard and the resulting economic costs to correct the performance problems, California certification of the engine Models 9 and 12 will not be pursued. This would avoid potential financial liability in terms of warranty claims and damage to the corporate reputation. If Briggs and Stratton does not certify these engines, the low cost, high volume segment of the utility engine market will not be available for sale in the state. The petition reports that if this occurs, a variety of California lawn care businesses, including lawn and garden equipment manufacturers and distributors which depend on Briggs and Stratton utility engines, would be adversely impacted resulting in lost sales and, subsequently, potential employment reductions.

One equipment manufacturer declared in the petition that between eighty-six and ninety percent of its business revenue is derived from the sale of Briggs and Stratton products and would be severely impacted by the unavailability of engine Models 9 and 12. The petition also stated that other businesses reported that they would suffer potential employment reductions due to the lack of available Briggs and Stratton utility engines. Furthermore, the petition contends that California equipment manufacturers would be at a disadvantage when selling their products nationwide due to the lack of low cost, reliable California-certified utility engines. The conclusion to be drawn from the petition is that the overall impact would be employment reductions at many of these lawn and garden businesses due to higher equipment costs and sales losses as the result of higher priced, and possibly less reliable, utility engines required to meet the 300 g/bhp-hr CO standard.

2. The proposed modification to the CO standard should not have an overall adverse impact on the environment. The proposed CO standard of 350 g/bhp-hr would still provide a forty-six percent reduction in CO emissions relative to CO levels emitted by older, uncontrolled lawnmower engines. In addition, since the HC plus NOx standards for Class I and II engines would not be altered, lawnmower engines certified under the proposed CO standard would still emit approximately seventy percent less HC plus NOx emissions

relative to uncontrolled lawnmower engines. Also, Briggs and Stratton contends that if the 300 g/bhp-hr CO standard were retained, and its engine Models 9 and 12 not certified in California, potentially greater environmental harm may result. In such a situation, consumers may delay purchasing new lawnmowers because low cost models would not be available. This could slow the retirement of older, higher-emitting lawnmowers resulting in lower than expected reductions in HC plus NOx, and CO emissions in California.

3. If the ARB's utility regulations for Class I and II engines are amended, Briggs and Stratton claims that ARB's regulations would become equivalent with the U.S. EPA's Class I and II utility engine regulations for HC plus NOx, and CO emissions. If the ARB utility regulations are equivalent to the U.S. EPA's regulations, the burden on utility engine manufacturers to produce separate engines for the California and national markets would be alleviated.

B. PETITION ASSESSMENT

1. Technical Feasibility

In its discussion of technical feasibility, the petition states that performance tests of the Briggs and Stratton Model 12 engine calibrated to meet the 300 g/bhp-hr CO standard resulted in unacceptable engine performance when operating under actual in-use conditions. Acceptable performance generally requires the following: the engine should recover quickly after the lawnmower encounters a severe transient load such as tall wet grass, it should start easily and run smoothly when cold or tilted, and it should restart readily when hot. CO emissions are primarily a function of air-to-fuel ratio. In an effort to meet the 300 g/bhp-hr CO standard, the fuel flow to the Model 12 engine was reduced resulting in a leaner air-to-fuel ratio. The enleanment of the fuel mixture caused the engine to operate too close to the acceptable performance limit and resulted in unstable engine operation or stalling when the lawnmower encountered a heavy load. Briggs and Stratton also determined that their Model 9 engine would experience similar performance problems when calibrated to meet the 300 g/bhp-hr CO standard.

Consequently, because of the lean operating performance problems, the engine Models 9 and 12 have not been certified in California. Briggs and Stratton elected to not certify these engines out of a concern that the engines would be subject to a potentially excessive warranty return rate. Inexpensive utility engines such as the Models 9 and 12 are not usually repaired when warranty service is claimed due to the high cost of repairs relative to the overall engine cost. Rather, a poorly operating new engine is replaced with another new engine while the faulty engine is returned to the manufacturer. By not certifying the engine Models 9 and 12, Briggs and Stratton has chosen not to risk the potential adverse economical impact of replacing possibly many faulty new engines returned under warranty, as well as prevented potentially serious damage to their corporate reputation.

In its petition, Briggs and Stratton contends that it explored technical alternatives to solve these performance problems. It states that it spent approximately twenty-two million dollars in its effort to meet

California's standards with acceptable product performance. According to the petition, it considered advanced technologies such as oxygen sensors and fuel injection. It, however, concluded that while such technologies have the potential to improve fuel control for lean burn operation and shorten engine response time to transient loads, they are not feasible within the current time constraints of the regulations nor within the present cost limitations of the product. Another alternative that Briggs and Stratton considered was overhead valve technology. The U.S. EPA has stated that overhead valve technology requires a lesser degree of enleanment to meet emission standards relative to side valve designs as the engine Models 9 and 12 are equipped. However, Briggs and Stratton contends that overhead valve technology does not inherently ensure lower CO emissions.

Regarding the use of catalytic converters or catalysts, Briggs and Stratton contends that its initial attempts revealed poor emissions durability, and raised safety concerns involving the elevated operating temperature of the catalysts with their proximity to the fuel tank, grass, operator, etc. While reporting that recent catalyst designs have achieved some success with limited testing, Briggs and Stratton contends that the cost of installing a catalyst on the Models 9 and 12 would be excessive. In addition, Briggs and Stratton reports that, to date, there has been insufficient actual testing of prototype lawnmowers equipped with catalysts for it to gain confidence in the in-use durability and customer acceptance of catalysts. Finally, Briggs and Stratton notes that although electric motor technology has been available to the consumer for the past two decades, they account for only five percent of the lawnmower population. It contends that their lack of widespread acceptance is due to limitations in allowable cord length and outlet availability, or for battery-equipped lawnmowers, the battery weight and limited operating time.

Although Briggs and Stratton reports that the advanced technologies mentioned in their petition were fully investigated, staff remains unconvinced that the use of catalysts would not be technically feasible for the engine Models 9 and 12 in meeting the 300 g/bhp-hr CO standard. To date, eight Class I and II utility engines have been certified to meet Tier I standards with catalyst technology, albeit only two of these certified engines from another manufacturer have the side valve configuration similar to the engine Models 9 and 12. However, it should be noted that these certified side valve, catalyst-equipped engines have yet to be put into production. Staff also acknowledges that installing a catalyst on the engine Models 9 and 12, which are Briggs and Stratton's lowest cost lawnmower engines, will have an impact on the lawnmowers' retail cost although this impact would most likely be minor. Finally, when the 300 g/bhp-hr CO standard was adopted in December 1990, the staff did not envision that catalysts would be necessary to meet the Tier I emission standards. The intent of the Tier I standards was to initiate the production of lower-emitting utility engines by, for instance, improving carburetor designs for better fuel metering and manufacturing quality with closer design tolerances. Staff did not believe that advanced technologies, such as catalysts, would be necessary until the Tier II emission standards are implemented in 1999.

2. Unavailability of Low Cost Class I Engine

It is conceivable that businesses and consumers would delay purchasing new lawnmowers due to the lack of low cost models as the petition contends. Also, in the short term, the lack of low cost lawnmowers is sure to require some lawn and garden equipment manufacturers, who normally use the Briggs and Stratton engine Models 9 and 12 in their equipment, to modify their equipment in order to accommodate certified Class I engines which cost more. This will incur expenses which could be passed on to the end users. Some commercial businesses and consumers will undoubtedly delay purchasing new lawnmowers due to the higher cost of lawn and garden equipment equipped with such engines. Although some businesses and consumers may purchase currently available lawnmowers with engines certified to the present 300 g/bhp-hr standard despite the higher cost, market availability of the low cost Briggs and Stratton engine Models 9 and 12 remains a significant concern.

Should this occur, older, higher-emitting lawnmowers may remain in service for a longer period of time resulting in a delay of emission benefits. It is Briggs and Stratton's contention that without their low cost, high volume lawnmower engines being available in California, possibly sixty percent of the current in-use lawnmower population in the state would remain in service for a longer period of time. Briggs and Stratton further asserts that the retention of older lawnmowers in service would delay HC plus NOx emission reductions which are more critical than CO reductions to the air quality in California. As stated, the Model 9 and 12 engines are presently capable of meeting the current HC plus NOx emission standard, which is approximately 70 percent lower than the emissions of an uncontrolled engine. Thus, because of the high sales volume of these engine models, the continued presence of engines that meet the 1995 HC plus NOx standard would be desireable. A study provided in the petition indicates that any postponement in emission benefits due to consumers delaying their purchase of new, lower-emitting lawnmowers because of low cost model unavailability would likely be a short term effect. Nonetheless, expedient reductions in ozone precursors should be pursued.

3. Class II Engines

The engine Models 9 and 12 are under 225 cc displacement and, therefore, are considered Class I utility engines; however, the petition also requests CO standard relief for Class II engines which are greater than or equal to 225 cc displacement. Briggs and Stratton did not provide any independent justification for Class II engines in the petition. However, information provided by another manufacturer is similar to the justification provided by Briggs and Stratton for relaxing the Class I CO standard. From this information, staff believes that improved in-use performance would be achieved for Class II utility engines if the CO standard is relaxed for this class since these engines share the same fundamental technology as Class I engines. Staff believes that relaxing the CO standard for Class I and II utility engines may reduce HC plus NOx emissions slightly due to the relationship which exists with CO emissions. This is because, without catalyst technology, the 300 g/bhp-hr standard requires some utility engine models to be set to such a lean air-to-fuel ratio, that evidently, slight engine combustion misfire occurs which causes the HC plus NOx emissions to

increase. Calibrating engines to meet a 350 g/bhp-hr CO standard would alleviate these potential performance problems and better ensure that HC plus NOx levels would be safely below the HC plus NOx standard. This HC plus NOx "safety cushion" would help to ensure in-use compliance with the standard.

4. U.S. EPA Emission Standards

The U.S. EPA has established a 350 g/bhp-hr CO standard for Class I and II utility engines. The U.S. EPA test procedures requires that a non-reformulated gasoline test fuel, referred to as Indolene, be used for certification testing. This is because reformulated gasolines are not available in all states. California test procedures allows the use of either Indolene or reformulated gasoline, referred to as Phase II reformulated gasoline, for certification. Staff has obtained emission data which show that almost a 50 g/bhp-hr reduction in CO emissions can be gained with the use of Phase II reformulated gasoline in utility engines as opposed to using Indolene. Even though Phase II reformulated gasoline provides this significant CO reduction, Briggs and Stratton has petitioned to relax the CO standard from 300 g/bhp-hr to 350 g/bhp-hr. Therefore, Briggs and Stratton has incorrectly characterized the proposed California CO standard of 350 g/bhp-hr, which allows the use of the cleaner burning Phase II reformulated gasoline, as being equivalent to the U.S. EPA's 350 g/bhp-hr which strictly requires Indolene as a test fuel. Consequently, if adopted, the proposed 350 g/bhp-hr CO standard would <u>not</u> align the ARB's current utility engine emission standards for Class I and Class II engines with U.S. EPA's nonroad Phase I emission standards for these same classes of utility engines in terms of equivalent stringency. Nevertheless, for the technical and economic reasons cited, staff recommends the proposed CO standard relaxation. The ARB staff understands that Briggs and Stratton and the Engine Manufacturers Association are presently engaged in discussions with the U.S. EPA regarding similar-type amendments to the federal CO standard.

V. ISSUES OF CONTROVERSY

There are no known or anticipated issues of controversy with these proposed regulatory amendments.

VI. REGULATORY ALTERNATIVES

The staff has not identified any alternatives to the proposed regulatory amendments.

VII. AIR QUALITY, ENVIRONMENTAL, AND COST IMPACTS

A. AIR QUALITY AND ENVIRONMENTAL IMPACTS

1. CO Attainment Effects

In California, ambient CO levels have been decreasing steadily during the past few years. Since most California air basins have recently come into compliance with the ambient CO standard as established by the National Ambient Air Quality Standards (NAAQS), the ARB plans to request from the U.S. EPA a redesignation of those air basins currently categorized as in CO nonattainment. The South Coast air basin and possibly the Lake Tahoe air basin may be the only two basins, of the fourteen California air basins, currently having difficulty achieving the NAAQS for CO. During 1992, the South Coast air basin, for example, exceeded the NAAQS for CO on six days and was the only California air basin in violation for CO. This compares to 191 days in violation of the NAAQS for ozone in the South Coast air basin during that same year. Partly due to the introduction of oxygenated gasoline in the fall of 1992, most monitoring sites in California reported some of the lowest levels of ambient CO ever recorded. Furthermore, the commercial introduction of Phase II reformulated gasoline in California is expected to reduce current ambient CO levels by 1300 tons per day statewide when it becomes commercially required in June 1996. Presently, the Lake Tahoe and South Coast air basin are scheduled to achieve CO attainment by the year 2000. Amending the Class I and II utility engine CO standard from 300 g/bhp-hr to 350 g/bhp-hr is not expected to adversely impact the CO attainment schedule.

2. Ozone Attainment Effects

Ten air basins continually violate NAAQS ozone standards each year with six of these ten air basins classified as being serious to extreme in ozone nonattainment. Clearly, ozone attainment, rather than CO attainment, is the more serious challenge to the state's air quality. All areas are scheduled to be in ozone attainment by the year 2010. Accordingly, it is important to not delay the retirement and turnover of old, high HC plus NOx emitting lawnmowers to new lawnmowers meeting the 1995 HC plus NOx standard. The staff's proposal would allow the natural retirement of the old lawnmowers to continue unabated resulting in critical HC plus NOx reductions required for ozone attainment.

3. Emission Inventory Impact of Proposed Class I and II CO Standard Relaxation

The calendar year 1998 was used for the following air quality assessment since this year would be the final year that the 300 g/bhp-hr CO standard would be in effect and would, therefore, reflect the greatest impact of amending the CO standard to 350 g/bhp-hr. The statewide CO emission inventory baseline for uncontrolled Class I and II utility engines prior to 1995 was 354 tons per day (TPD). The 300 g/bhp-hr CO standard would reduce this emission baseline to 307 TPD in 1998. This would represent a 47 TPD or 13 percent reduction relative to the baseline inventory. In comparison, a 350 g/bhp-hr CO standard would reduce the

emission baseline from 354 TPD to 329 TPD in 1998. This would represent a 25 TPD or 7 percent reduction relative to the baseline inventory.

The statewide emissions impact resulting from relaxing the standard from 300 g/bhp-hr to 350 g/bhp-hr would be the difference between the baselines resulting from the two standards. In other words, the emissions impact would be the difference between 307 TPD and 329 TPD in 1998, or 22 TPD which represents the loss in CO benefit if the 300 g/bhp-hr CO standard is relaxed to 350 g/bhp-hr. Of this 22 TPD CO benefit loss, 9 TPD would be apportioned to the South Coast air basin. However, as stated above, the CO attainment schedule is not expected to be adversely impacted by this loss in CO benefit in light of the significant CO emission reductions which are expected from Phase II reformulated gasoline. Furthermore, overriding economic considerations exist to justify the relaxation as explained in the following section.

B. COST, COST-EFFECTIVENESS, AND ECONOMIC IMPACTS

Since staff is proposing a relaxation of the standards, no increase in cost to industry would be forthcoming. Indeed, the economic impact to industry would be positive. In the petition, several California businesses have indicated that they are expecting adverse effects from the significant shortages of durable, reliable low cost lawnmower engines that would result from retaining the current 300 g/bhp-hr CO standard. These businesses are mostly small companies which have developed longstanding relationships with Briggs and Stratton and rely on their utility engines. This market involves engine distributors who sell Briggs and Stratton engines to equipment manufacturers who, in turn, install the engines into various lawn and garden equipment and then sell their products to landscaping businesses, retailers, and consumers. Because Briggs and Stratton has elected not to certify the engine Models 9 or 12 to the 300 g/bhp-hr CO standard, distributors of these engines would probably have to sell other higher priced engines capable of meeting the standard. Equipment manufacturers would purchase the higher cost engines and most likely pass this cost on to retailers, landscapers, and consumers. In the petition, as a result of higher equipment costs, several businesses reported anticipating higher operating costs and lower sales which will result in employment reductions. Without having extensive marketing research, staff cannot comment on the accuracy of the sales and revenue loss estimates mentioned in the petition. Nevertheless, staff recognizes the likelihood that retaining the 300 g/bhp-hr CO standard would have some negative impact on the lawn care industry in California. As stated, this negative impact would override the relatively minor air quality impact of amending the CO standard to 350 g/bhp-hr.

C. IMPACT ON THE ECONOMY OF THE STATE

The proposed amendments would not adversely affect the economy of the state. As stated above, the proposed amendments are expected to prevent an adverse economic impact for industry. Therefore, the impact on the state's economy should be positive as it allows continued small business growth and employment.

VIII. REFERENCES

Air Quality Management Plan 1994, South Coast Air Quality Management District, April 1994.

Air Resources Board Mail-Out #90-64, Staff Report: Initial Statement of Reasons for Proposed Rulemaking for 1994 and Subsequent Model Year Utility and Lawn and Garden Equipment Engines, California Air Resources Board, October 22, 1990.

Air Resources Board Mail-Out #94-24, Staff Report: Initial Statement of Reasons for Proposed Rulemaking for 1995 and Later Model Utility and Lawn and Garden Equipment Engines, California Air Resources Board, June 10, 1994.

California Air Resources Board Status Report 1994, California Air Resources Board, December, 1994.

California Code of Regulations, Title 13, Section 2403, State of California.

Control of Air Pollution; Emission Standards for New Nonroad Spark-ignition Engines At or Below 19 Kilowatts, United States Protection Agency, 60 Federal Register 34582, July 3, 1995.

Engine Manufacturers Association Presentation to Air Resources Baord Staff, June 15, 1994.

The Proposed 1994 California State Implementation Plan for Ozone, Volumes I and II, California Air Resources Board, October 7, 1994.

Regulatory Impact Analysis and Regulatory Support Document, United States Environmental Protection Agency, May 1994.

Utility Engine Certification Data for California, California Air Resources Board, calendar year 1995.

Utility Engine Projected Sales Data for California, confidential, California Air Resources Board, calendar year 1995.

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1. A copy of the petition is attached hereto as Attachment A. The affidavits in support of the petition are available at the ARB Public Information Office for review and copies will be provided upon request.

2. For purposes of California law, the amendments become effective upon filing with the Secretary of State, government code section 11343.4. Under section 205 (c)(2) of the Federal Clean Air Act (42 U.S.C. section 7543 (i)(2)), Caliornia is required to receive authorization from the Administrator of the U.S. Environmental Protection Agency prior to enforcing a new emission standard for new off-road vehicles and engines.

ATTACHMENT A

State of California
Air Resources Board

In re **Briggs & Stratton Corporation, Environmental Care, Inc., H&E Brothers, Inc., McLane Manufacturing, Inc., Pacific Equipment and Irrigation, Inc., Power Research Co., Power-Trim, Inc., John Sanchez, Tru-Cut, Inc., Tru-Power, Inc., and WCS Distributing, Inc.** **Petition for Alternate Emission Standards for Small (0-25 hp) Gasoline-Powered Engines**	)	**Petition under Government Code § 11340.6 and Health & Safety Code §§ 39600, 39601**

Briggs & Stratton Corporation, Environmental Care, Inc., H&E Brothers, Inc., McLane Manufacturing, Inc., Pacific Equipment and Irrigation, Inc., Power Research Co., Power-Trim, Inc., John Sanchez, Tru-Cut, Inc., Tru-Power, Inc., and WCS Distributing, Inc., respectfully petition the Air Resources Board to amend the emissions standards for small spark-ignited engines codified at 13 C.C.R. § 2403. Petitioners submit their petition under Government Code § 11340.6 and Health & Safety Code §§ 39600 and 39601, in furtherance of the purposes of Health & Safety Code §§ 43013 and 43018.

The grounds for the proposed change in 13 C.C.R. § 2403 are fully set forth in affidavits accompanying this petition, and are discussed in a supporting memorandum filed by petitioner Briggs & Stratton Corporation. The specific changes sought in the current rules are shown

in Appendix A of this petition. In conformity with Gov't Code § 11340.6, petitioners summarize the reasons for granting the petition as follows:

1. The current text of 13 C.C.R. § 2403 was adopted by the Board in December 1990. This petition is based on new information not available to the Board at the time it adopted 13 C.C.R. § 2403 in December 1990. That new information shows that, for a very high percentage of engines currently sold in California, it is not technically feasible to meet the standard for carbon monoxide ("CO") emissions in the current rules. Those engines comprise two models of 3.5-5.0 horsepower engines produced by petitioner Briggs & Stratton Corporation. Briggs & Stratton has spent more than $22 million in an effort to meet the current standards established in December 1990. The effort has made it possible for Briggs & Stratton to meet the Board's December 1990 standards for control of exhaust hydrocarbons ("HC") and oxides of nitrogen ("NOx"). Briggs & Stratton's efforts have not, however, been able to achieve reductions in the level of CO emissions from the two relevant Briggs & Stratton models. Those two models account for approximately 60 percent of the nonhandheld small engines sold by all manufacturers in California today.

2. If the current CO standard is not modified, Briggs & Stratton will not be able to sell either of the two affected engine models in California, even though they meet the Board's HC+NOx standards. This petition seeks an amendment to the current CO limit to permit engine manufacturers to comply with a 350 gram-per-horsepower-hour ("g/hp-hr") limit, rather than the 300 g/hp-hr CO level in the current rules. The amended CO standard will still require an estimated 30 percent reduction in CO emissions from a typical engine used on a lawnmower. The change in the CO standard will have no adverse impact on the Board's schedule of emissions reductions to

bring California's CO nonattainment areas into compliance with the ambient CO standards, and no adverse health effects.[1]

3. If the current standard for CO emissions is not modified, a variety of California businesses that depend on the availability of a full range of small engines will be severely harmed. Those businesses include outdoor power equipment manufacturers based in California who rely on Briggs & Stratton engines and who cannot readily substitute other engines with similar price and performance characteristics. They also include independent California engine distributors and California consumers who would face increases in the price and reductions in the supply of outdoor power equipment. Those interests are represented by the petitioners here.[2] They predict significant losses in sales and reductions in employment at their California facilities if this petition is not granted.[3]

4. The reduction in the supply of certified engines caused by the current CO standard would also slow the transition of the current California in-use small engine population from *uncontrolled* emission levels to the *controlled* levels forecast in December 1990. Estimates prepared for petitioner Briggs & Stratton indicate that the reduction in the small-engine "turnover rate" will

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[1] *See* Hotz Aff. ¶¶ 39-44.

[2] The affidavits of the California businesses participating in this petition are excerpted in Appendix B.

[3] *See, e.g.,* McLane Aff. ¶ 18; Pinto Aff. ¶ 22; Dykes Aff. ¶¶ 18, 19; Mees Aff. ¶ 26; Stein Aff. ¶ 19; Danielson Aff. ¶ 20; Plutte Aff. ¶ 20; Sanchez Aff. ¶ 23 (all noting reduced employment if Briggs & Stratton engines are not available); *see also, e.g.,* McLane Aff. ¶¶ 17, 18; Pinto Aff. ¶ 21; Dykes Aff. ¶¶ 18, 19; Mees Aff. ¶ 25; Sanchez Aff. ¶ 21; Stein Aff. ¶¶ 18, 19; Danielson Aff. ¶ 20; Plutte Aff. ¶¶ 10, 11, 15 (all noting reduced sales and revenues if Briggs & Stratton engines are not available).

create a shortfall in the control of HC and NOx currently projected for the Board's December 1990 rules.[4] By amending the current rule to allow engines that meet the current HC+NOx levels to be sold in California, the Board would therefore both protect the economic interests of petitioners, and ensure that the main purpose of the December 1990 small engine rules, which was to reduce emissions of ozone precursors, will remain on schedule.

5. Granting the petition will also enable the Board to maintain consistency with upcoming federal exhaust emissions standards for CO from this class of engines. After initially proposing to adopt a CO standard like that in current 13 C.C.R. § 2403, the U.S. Environmental Protection Agency determined in its Final Rule for small-engine emissions published earlier this month that the 350 g/hp-hr CO standard would currently be "the lowest achievable CO standard" for "an adequate supply" of small engines, "given cost and leadtime constraints." 60 Fed. Reg. 34,582, 34,595 col. 1 (July 3, 1995). EPA therefore adopted a CO standard of 350 g/hp-hr limit. Favorable action on this petition will therefore help avoid any economic disadvantage for Californians in the national engine and outdoor power equipment markets.

6. The proposed change in the CO standard will not impose hardship on any participant in the California small-engine market, including any firm that competes with Briggs & Stratton or (in the case of the California manufacturer-petitioners) that uses engines supplied by a different engine company. All manufacturers that can meet the current CO limit will be able to remain in the California market. Briggs & Stratton engines certified to the higher CO limit will still

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[4] *See* Harrison Aff. ¶ 20 and Attachment B to Hotz Aff. at 3 (letter from Energy and Environmental Associates, Inc., enclosing inventory estimates).

have to recoup the costs of Briggs & Stratton's attempt to meet the current CO limit, which are believed to equal or exceed the per-engine compliance costs of other firms.

7. Petitioners seek this change in the current CO limit in 13 C.C.R. § 2403 effective January 1, 1996. Given current production cycles and the inventory levels typical in the outdoor power equipment market, a January 1, 1996, effective date for the change will allow petitioners to introduce an adequate supply of new engines meeting the amended standards in time to avoid hardship for California businesses, and to eliminate any shortfall in HC+NOx control benefits resulting from the current CO limit.

Conclusion

For the foregoing reasons and as more fully explained in the accompanying materials filed in support of this petition, petitioners respectfully request the Board grant their petition and amend the current standard for CO exhaust emissions set forth in 13 C.C.R. § 2403.

Respectfully submitted,

BRIGGS & STRATTON CORPORATION
ENVIRONMENTAL CARE, INC.
H&E BROTHERS, INC.
McLANE MANUFACTURING, INC.
PACIFIC EQUIPMENT & IRRIGATION, INC.
POWER RESEARCH CO.
POWER-TRIM, INC.
JOHN SANCHEZ
TRU-CUT, INC.
TRU-POWER, INC. AND
WCS DISTRIBUTING, INC.

ATTACHMENT B

CALIFORNIA REGULATIONS FOR 1995 AND LATER
UTILITY AND LAWN AND GARDEN EQUIPMENT ENGINES

Adopted: March 20, 1992
Amended: April 8, 1993
Amended: May 26, 1995
Amended: _____

NOTE: This document is printed in a style to indicate changes from the existing provisions. All existing language is indicated by plain type. All additions to language are indicated by underline. All deletions to language are indicated by ~~strikeout~~.

Proposed

Amend Title 13, California Code of Regulations, Chapter 9 Off-Road Vehicles and Engines Pollution Control Devices to read as follows:

2400. through 2402 [No Change]

2403. Exhaust Emission Standards and Test Procedures - Utility and Lawn and Garden Equipment Engines.

(a) [No Change]

(b) Exhaust emissions from new utility and lawn and garden equipment engines, manufactured for sale, sold, offered for sale, introduced or delivered for introduction into commerce in, or imported into California, shall not exceed:

Exhaust Emission Standards
(grams per brake horsepower-hour)

Calendar Year	Engine Class (1)	Hydro-carbon plus oxides of nitrogen (2)	Hydro-carbon (2)	Carbon monoxide	Oxides of nitrogen	Particulate
~~1995 to 1998~~	I	12.0	-	300	-	0.9 (3)
1995	II	10.0	-	300	-	0.9 (3)
	III (4)	-	220	600	4.0	-
	IV (4)	-	180	600	4.0	-
	V (4)	-	120	300	4.0	-
1996 to 1998	I	12.0	-	350	-	0.9 (3)
	II	10.0	-	350	-	0.9 (3)
	III (4)	-	220	600	4.0	-
	IV (4)	-	180	600	4.0	-
	V (4)	-	120	300	4.0	-
1999 and subsequent	I, II	3.2	-	100	-	0.25 (5)
	III, IV, V (4)	-	50	130	4.0	0.25 (5)

(1) "Class I" means utility and lawn and garden equipment engines less than 225 cc in displacement.
"Class II" means utility and lawn and garden equipment engines greater than or equal to 225 cc in displacement.

"Class III" means hand held utility and lawn and garden equipment engines less than 20 cc in displacement.
"Class IV" means hand held utility and lawn and garden equipment engines 20 cc to less than 50 cc in displacement.
"Class V" means hand held utility and lawn and garden equipment engines greater than or equal to 50 cc in displacement.

(2) The Executive Officer may allow gaseous-fueled (i.e., propane, natural gas) engine families, that satisfy the requirements of the regulations, to certify to either the hydrocarbon plus oxides of nitrogen or hydrocarbon emission standard, as applicable. on the basis of the non-methane hydrocarbon (NMHC) portion of the total hydrocarbon emissions.

(3) Applicable to all diesel-cycle engines.

(4) These standards may be used for engines that meet the requirements of (i) and (ii) below, and for two-stroke engines that exclusively power snow throwers.

(i) The engine must be used in a hand-held piece of equipment. To be classified as a hand-held piece of equipment, the equipment must require its full weight to be supported by the operator in the performance of its requisite function.

(ii) The engine and equipment must require multi-positional characteristics for use (e.g. it must be capable of operating in any position, upside down, or sideways as required to complete the job).

(5) Applicable to all diesel-cycle engines, and all two-stroke engines.

(c) through (f) [No Change]

NOTE: Authority cited: Sections 39600, 39601, 43103 and 43018, Health and Safety Code.
Reference: Sections 43013, 43017 and 43018, Health and Safety Code.

2404. through 2407. [No Change]

ATTACHMENT C

State of California
AIR RESOURCES BOARD

CALIFORNIA EXHAUST EMISSION STANDARDS AND TEST PROCEDURES FOR 1995 AND LATER UTILITY AND LAWN AND GARDEN EQUIPMENT ENGINES

Adopted: March 20, 1992
Amended: April 8, 1993
Amended: August 29, 1994
Amended: May 26, 1995
Amended: _____

NOTE: This document is printed in a style to indicate changes from the existing provisions. All existing language is indicated by plain type. All additions to language are indicated by underlined text. All deletions to language are indicated by ~~strikeout~~.

The numbering convention employed in this document, in order of priority, is: I.1.a.1.i.A.

CALIFORNIA EXHAUST EMISSION STANDARDS AND TEST PROCEDURES
FOR 1995 AND LATER
UTILITY AND LAWN AND GARDEN EQUIPMENT ENGINES

Part I. Emission Regulations for 1995 and Later New Lawn and Garden and Utility Equipment Engines, General Provisions.

1. through 8. [No Change]

9. Exhaust Emission Standards For 1995 and Later Utility and Lawn and Garden Engines.

(a) [No Change]

(b) Exhaust emissions from new utility and lawn and garden equipment engines, manufactured for sale, sold, offered for sale, introduced or delivered for introduction into commerce, or imported into California, shall not exceed:

Exhaust Emission Standards
(grams per brake horsepower-hour)

Calendar Year	Engine Class (1)	Hydrocarbon plus oxides of nitrogen (2)	Hydrocarbon (2)	Carbon monoxide	Oxides of nitrogen	Particulate
~~1995 to 1998~~	I	12.0	-	300	-	0.9 (3)
1995	II	10.0	-	300	-	0.9 (3)
	III (4)	-	220	600	4.0	-
	IV (4)	-	180	600	4.0	-
	V (4)	-	120	300	4.0	-
1996 to 1998	I	12.0	-	350	-	0.9 (3)
	II	10.0	-	350	-	0.9 (3)
	III (4)	-	220	600	4.0	-
	IV (4)	-	180	600	4.0	-
	V (4)	-	120	300	4.0	-
1999 and subsequent	I, II	3.2	-	100	-	0.25 (5)
	III, IV, V (4)	-	50	130	4.0	0.25 (5)

(1) "Class I" means utility and lawn and garden equipment engines less than 225 cc in displacement.
"Class II" means utility and lawn and garden equipment engines greater than or equal to 225 cc in displacement.

"Class III" means hand held utility and lawn and garden equipment engines less than 20 cc in displacement.
"Class IV" means hand held utility and lawn and garden equipment engines 20 cc to less than 50 cc in displacement.
"Class V" means hand held utility and lawn and garden equipment engines greater than or equal to 50 cc in displacement.

(2) The Executive Officer may allow gaseous-fueled (i.e., propane, natural gas) engine families, that satisfy the requirements of Section 20 of Part I, to certify to either the hydrocarbon plus oxides of nitrogen or hydrocarbon emission standard, as applicable, on the basis of the non-methane hydrocarbon (NMHC) portion of the total hydrocarbon emissions.

(3) Applicable to all diesel-cycle engines.

(4) These standards may be used for engines that meet the requirements of (i) and (ii) below, and for two-stroke engines that power only snow throwers.

(i) The engine must be used in a hand-held piece of equipment. To be classified as a hand-held piece of equipment, the equipment must require its full weight to be supported by the operator in the performance of its requisite function.

(ii) The engine and equipment must require multi-positional characteristics for use (e.g. it must be capable of operating in any position, upside down, or sideways as required to complete the job).

(5) Applicable to all diesel-cycle engines, and all two-stroke engines.

(c) [No Change]

10. through 33. [No Change]

Part II. through Part IV. [No Change]