State of California
AIR RESOURCES BOARD

**Final Statement of Reasons for Rulemaking,
Including Summary of Comments and Agency Response**

PUBLIC HEARING TO CONSIDER THE PROPOSED AMENDMENTS TO THE EVAPORATIVE EMISSION REQUIREMENTS FOR SMALL OFF-ROAD ENGINES

Public Hearing Date: November 17, 2016
Agenda Item No.: 16-10-2

I. GENERAL

A. Board Action and Update to the Initial Statement of Reasons

The Staff Report: Initial Statement of Reasons for Rulemaking (Staff Report), entitled "Public Hearing to Consider the Proposed Amendments to the Evaporative Emission Requirements For Small Off-Road Engines," released September 27, 2016, is incorporated by reference herein. The Staff Report described the rationale for the proposed amendments. On September 27, 2016, all references relied upon and identified in the Staff Report were made available to the public.

On November 17, 2016, the Air Resources Board (ARB or Board) held a public hearing to consider the proposal to amend the small off-road engine (SORE) evaporative emission regulations. Written comments were received from five individuals or organizations during the 45-day comment period. Oral comments were presented by 12 individuals or organizations, with 3 additional individuals yielding their time to 2 of the 12 presenters. Written comments were received from 3 of the 12 oral comment presenters. At the conclusion of the hearing, the Board adopted Resolution 16-14, which approved for adoption the proposed amendments (including additions) to the evaporative emission requirements for small off-road engines in title 13, chapter 15, article 1, section 2750, et seq., of the California Code of Regulations, and including the amendments to the following procedures, incorporated by reference:

- CP-901, Certification and Approval Procedure for Small Off-Road Engine Fuel Tanks
- CP-902, Certification and Approval Procedure for Evaporative Emission Control Systems
- TP-901, Test Procedure for Determining Permeation Emissions From Small Off-Road Engines and Equipment Fuel Tanks
- TP-902, Test Procedure for Determining Diurnal Evaporative Emissions From Small Off-Road Engines and Equipment.

The amendments were initially proposed by staff and described in the Notice of Public Hearing (45-Day Notice) and Staff Report.

Resolution 16-14 also directed the Executive Officer to determine whether additional conforming modifications to the regulations were appropriate. The Executive Officer was directed to make the modified regulations (with the modifications clearly identified) and any additional documents or information available for a supplemental 15-day public comment period, and to consider any comments on the modifications received during the supplemental 15-day public comment period. The Executive Officer was then directed to: (1) adopt the modified regulation as it was made available for public comment, with any appropriate additional modifications; (2) make all additional modifications available for public comment for a period of at least 15 days; and (3) present the regulations to the Board for further consideration, if warranted.

After the November 17, 2016, public hearing, staff proposed modifications to the originally proposed amendments to the regulations, certification and test procedures in response to concerns expressed by SORE industry representatives in comments received during the 45-day comment period, during the public hearing and in subsequent discussions.

The text of the proposed modifications to the regulations, certification and test procedures, with the further modified text clearly indicated, was made available for a 15-day public comment period by issuance of a "Notice of Public Availability of Modified Text and Availability of Additional Documents," (15-Day Notice). The 15-day comment period started on May 23, 2017, and ended on June 7, 2016, at 5:00 p.m.

On the date that the 15-Day Notice and all attachments were posted on the internet, the posted documents were also electronically distributed to other parties identified, per section 44(a), title 1, California Code of Regulations, in accordance with Government Code section 11340.85, and to all persons having subscribed to the following ARB listservers: ms-mailings, sore, sore2016.

This Final Statement of Reasons (FSOR) updates the Staff Report by identifying and providing the rationale for the modifications made to the originally proposed regulatory text, including non-substantial modifications. The FSOR also contains a summary of the comments received by ARB on the proposed amendments during the formal rulemaking process and ARB's responses to those comments.

B. Mandates and Fiscal Impacts to Local Governments and School Districts

The Board has determined that this regulatory action will not result in a mandate to any local agency or school district the costs of which are reimbursable by the state pursuant to Part 7 (commencing with section 17500), Division 4, Title 2 of the Government Code.

C. Consideration of Alternatives

For the reasons set forth in the Staff Report, in staff's comments and responses at the hearing, and in this FSOR, the Board determined that no alternative considered by the agency would be more effective in carrying out the purpose for which the regulatory action was proposed, or would be as effective and less burdensome to affected private persons, or would be more cost-effective to affected private persons and equally effective in implementing the statutory policy or other provisions of law than the action taken by the Board.

II. MODIFICATIONS MADE TO THE ORIGINAL PROPOSAL

A. Modifications Approved at the Board Hearing and Provided for in the 15-Day Comment Period

Pursuant to the Board direction provided in Resolution 16-14, on May 23, 2017, ARB released a 15-Day Notice to address concerns expressed by SORE industry representatives in comments received during the 45-day comment period, during the public hearing and in subsequent discussions. The 15-Day Notice described each substantive modification to the original proposal. The reasons for the changes are the same as for the amendments initially proposed, and to further improve the testing and certification procedures.

B. Non-Substantial Modifications

Subsequent to the 15-day public comment period mentioned above, staff identified the following additional non-substantive changes to the regulation:

Section 2752: Corrected the numbering of definition 33.

The following reference was incorrectly cited in the Staff Report: CAA, 1990. Federal Clean Air Act (CAA). Incorporated into United States Code (U.S.C.) as Title 42, Chapter 85. 1990. http://www.epa.gov/air/caa/ (accessed August 16, 2016).
The correct reference should be: CAA, 1990. "§7543. State Standards," Federal Clean Air Act (CAA). Incorporated into United States Code (U.S.C.) as Title 42, Chapter 85, Subchapter II, Part A. 1990. http://uscode.house.gov/view.xhtml?req=granuleid:USC-prelim-title42-section7543&num=0&edition=prelim (accessed May 14, 2017).

The above described modifications constitute non-substantial changes to the regulatory text because they more accurately reflect the numbering of a section and correct spelling and grammatical errors, but do not materially alter the requirements or conditions of the proposed rulemaking action.

III. DOCUMENTS INCORPORATED BY REFERENCE

The regulation and the incorporated certification procedures and test procedures adopted by the Executive Officer incorporate by reference the following documents:

ANSI/OPEI B71.10 2013, American National Standard for Off-Road Ground-Supported Outdoor Power Equipment - Gasoline Fuel Systems - Performance Specifications and Test Procedures, 2013. http://webstore.ansi.org/RecordDetail.aspx?sku=ANSI%2fOPEI+B71.10-2013. (referenced in 2752(a)(1), 2754(e))

Society of Automotive Engineers (SAE), (2013). J1737: Test Procedure to Determine the Hydrocarbon Losses from Fuel Tubes, Hoses, Fittings, and Fuel Line Assemblies by Recirculation, Surface Vehicle Recommended Practice, Stabilized May 2013. http://standards.sae.org/j1737_201305/. (referenced in 2752(a)(5), 2752(a)(27), 2753(b)(2)(B), 2754(b)(2), 2755(b), 2758(b)(2)(B)2.i., 2758(b)(2)(B)1., CP-901 5.3, CP-901 6.4, CP-901 7, CP-901 8, CP-902 4.1, CP-902 5.6, CP-902 6, CP-902 7)

U.S. EPA, Method 301 – Field Validation of Pollutant Measurement Methods from Various Waste Media, December 29, 1992, https://www.epa.gov/sites/production/files/2016-06/documents/m-301.pdf. (referenced in CP-901 6.5, CP-902 5.7)

Society of Automotive Engineers (SAE), (2012). J30: Fuel and Oil Hoses, Revised February 2012. http://standards.sae.org/j30_201202/. (referenced in 2752(a)(5), 2752(a)(25), 2753(b)(2)(B), 2754(b)(2), 2755(b), 2758(b)(2)(B)2.ii., 2758(b)(2)(B)2., CP-901 5.3, CP-901 6.4, CP-901 7, CP-901 8, CP-902 4.1, CP-902 5.6, CP-902 6, CP-902 7)

Society of Automotive Engineers (SAE), (2011). J1527: Marine Fuel Hoses, Revised February 2011. http://standards.sae.org/j1527_201102/. (referenced in 2752(a)(5), 2752(a)(26), 2753(b)(2)(B), 2754(b)(2), 2755(b), 2758(b)(2)(B)2.iii., 2758(b)(2)(B)3., CP-901 5.3, CP-901 6.4, CP-901 7, CP-901 8, CP-902 4.1, CP-902 5.6, CP-902 6, CP-902 7)

Society of Automotive Engineers (SAE), (2013). J2996: Small Diameter Fuel Line Permeation Test Procedure, Issued January 2013. http://standards.sae.org/j2996_201301/. (referenced in 2752(a)(5), 2752(a)(28), 2753(b)(2)(B), 2754(b)(2), 2755(b), 2758(b)(2)(B)2.iv., 2758(b)(2)(B)4., CP-901 5.3, CP-901 6.4, CP-901 7, CP-901 8, CP-902 4.1, CP-902 5.6, CP-902 6, CP-902 7)

These documents were incorporated by reference because it would be cumbersome, unduly expensive, and otherwise impractical to publish them in the California Code of Regulations. In addition, some of the documents are copyrighted, and cannot be reprinted or distributed without violating the licensing agreements. The documents are lengthy and highly technical test methods and engineering documents that would add unnecessary additional volume to the regulation. Distribution to all recipients of the California Code of Regulations is not

needed because the interested audience for these documents is limited to the technical staff at a portion of reporting facilities, most of whom are already familiar with these methods and documents. Also, the incorporated documents were made available by ARB upon request during the rulemaking action and will continue to be available in the future. The documents are also available from college and public libraries, or may be purchased directly from the publishers.

IV. SUMMARY OF COMMENTS RECEIVED DURING THE 45-DAY COMMENT PERIOD AND AGENCY RESPONSE

Written comments were received during the 45-day comment period in response to the November 17, 2016, public hearing notice, and written and oral comments were presented at the Board Hearing. Listed below are the organizations and individuals that provided comments during the 45-day comment period or during the public hearing:

Commenter	**Affiliation**
Duke, Robert	The Surety and Fidelity Association of America (SFAA)
Librie, Chris	Chris Librie, individual (CL)
Phillips, Kathryn* Michele Hasson Bonnie Holmes-Gen* Adrian Martinez Bill Magavern*	Sierra Club California (SCC et al.) Center for Community Action and Environmental Justice American Lung Association of California (ALA) Earthjustice Coalition for Clean Air (CCA)
Gault, Roger*	Truck and Engine Manufacturers Association (EMA)
Santos, Antonio	Manufacturers of Emission Controls Association (MECA)
Knott, Greg**	Outdoor Power Equipment Institute (OPEI)
Somorai, Sarah**	American Honda Motor Co. (Honda)
Mersch, Zach**	Mean Green Mowers (MG)
Hogo, Henry***	South Coast Air Quality Management District (SCAQMD)
Mabe, Daniel***	American Green Zone Alliance (AGZA)
Zeilstra, J.J.****	Kawasaki Motors Corp., U.S.A.
Lang, Derek****	John Deere
St. Martin, Dan****	Briggs & Stratton Corp.
Geller, Michael***	Manufacturers of Emission Controls Association (MECA)
Barnaby, Gerry***	EGO
Walsh, Kevin***	Fresh Air Yard Care (FA)

The commenters listed above with a single asterisk (*) presented written comments during the 45-day comment period and oral testimony at the November 17, 2016, public hearing. The commenters listed above with two asterisks (**) submitted written comments and oral testimony at the November 17, 2016, Board Hearing. The commenters listed above with three asterisks (***) presented oral testimony at the November 17, 2016 public hearing. The commenters listed above with four asterisks (****) signed up to present oral testimony but yielded their time to other presenters. OPEI submitted some comments in tabular form with the following columns: “CARB Document,” “CARB Language (proposed),” “OPEI/EMA Proposed Language Changes,” and “Comment / Reason.” The “CARB Language

(proposed)" column contained formatting changes and OPEI's comments or summaries of the language. The language is presented in this FSOR as part of OPEI's comments. In addition, EMA and OPEI submitted written comments during the 15-day comment period (see section V of this FSOR).

A. Introductory Comments

1.

Comment: The Surety & Fidelity Association of America ("SFAA") is a non-profit corporation whose member companies collectively write the majority of surety and fidelity bonds in the United States. SFAA is a licensed rating or advisory organization in all states and is designated by state insurance departments as a statistical agent for the reporting of fidelity and surety experience. The vast majority of bonds that secure regulatory obligations are provided by SFAA members. We appreciate the opportunity to submit comments regarding the captioned proposed regulations, particularly the new bond requirements set forth at proposed 13 CCR § 2774. (SFAA, October 20, 2016, letter p. 1)

2.

Comment: The Truck and Engine Manufacturers Association ("EMA") hereby submits its comments on the California Air Resources Board's ("CARB's") Proposed Amendments to the Evaporative Emission Requirements for Small Off-Road Engines ("the SSI Evaporative Regulation Amendments").

EMA is the trade association that represents the world's leading manufacturers of non-handheld small spark-ignition engines. More specifically, EMA's members are the manufacturers of the engines that CARB regulates directly, or indirectly through their equipment manufacturer customers under the SSI Evaporative Regulation for engines greater than 80 cc. Accordingly, EMA and its members have a direct and significant stake in the regulatory proposal at issue. EMA strongly supports the comments provided by the Outdoor Power Equipment Institute (OPEl) for engines less than or equal to 80 cc not included in EMA's comments, and OPEl comments for engines greater than 80 cc that are covered by both organizations. (EMA, November 17, 2016, letter p. 1)

3.

Comment: Good morning. I'm Roger Gault with the Truck & Engine Manufacturers Association, otherwise known as EMA.

EMA is a trade association that represents the world's leading manufacturers of non-handheld small spark-ignition engines. And more specifically, EMA's members are the manufacturers of engines that CARB regulates directly or indirectly through their equipment manufacturer

customers under the SSI, as opposed to SORE, evaporative regulation for engines greater than 80 CCs.

Accordingly, EMA and its members have a direct and significant stake in the regulatory proposal at issue.

EMA strongly supports the comments provided by OPEI for engines less than or equal to 80 CCs not included in EMA's comments and OPEI's comments for engines greater than 80 CCs covered by both organizations. (EMA, November 17, 2016, public hearing transcript p. 67 line 25 – p. 68 line 15)

4.

Comment: The Outdoor Power Equipment Institute ("OPEI") respectfully submits these comments to the California Environmental Protection Agency Air Resources Board's ("ARB") "Proposed Amendments to the Evaporative Emission Requirements for Small Off-Road Engines" ("the proposed amendments").

OPEI is an international trade association representing more than 100 manufacturers and their suppliers of small spark-ignited engines and outdoor power equipment. OPEI members products are ubiquitous in California households, including products such as lawnmowers, garden tractors, utility vehicles, grass trimmers, brush cutters, lawn edgers, chain saws, snow throwers, tillers, leaf blowers and other lawn and garden implements. As manufacturers of small off-road engines ("SORE") and SORE powered equipment, OPEI members will be directly affected by the proposed amendments. In addition, to the extent that concerns are not included here-in, OPEI strongly supports the comments provided by the Truck and Engine Manufacturers Association ("EMA"). (OPEI, November 17, 2016, letter p.1)

5.

Comment: Good morning, Madam Chair and Board members. Thank you for the opportunity to present these comments be today on behalf of OPEI. My name's Gregg Knott.

OPEI is an international trade association representing more than 100 manufacturers and their suppliers of small spark-ignited engines and outdoor power equipment.

Outdoor power equipment is ubiquitous in America households and is an important part of the California economy. As manufacturers of SORE powered equipment, OPEI members will be directly affected by the proposed amendments. In addition to these comments, OPEI strongly supports the comments of the Truck & Engine Manufacturers Association.

(OPEI, November 17, 2016, public hearing transcript p. 60 line 7 – p. 61 line 21)

6.

Comment: American Honda Motor Co., Inc. submits these comments to the California Air Resources Board (ARB).in regards to the "Proposed Amendments to the Evaporative Emission Requirements for Small Off-Road Engines." Honda supports comments made by the Outdoor Power Equipment Institute (OPEl) and the Truck and Engine Manufacturers Association (EMA).

Honda is the largest manufacturer of engines worldwide for a diverse set of products which includes automobiles, motorcycles, marine engines and power equipment. We sell over 1 million small spark-ignited engines in the United States annually, and we sell our engines to over 1,000 equipment manufacturers which are used in a wide variety of applications. (Honda, November 17, 2016, letter p.1)

7.

Comment: Like to say good morning to the Board and to the ARB staff.

First off, thank you for giving me the opportunity to speak today. My name is Sarah Somorai and I'm the senior certification engineer at American Honda Motor Company for small off-road engines.

Honda is a member of EMA and OPEI and we are in support of both their comments.

Honda is the largest manufacturer of engines worldwide. In the U.S. alone, we sell over 1 million small spark-ignited engines, and we sell to over 1,000 equipment manufacturers which are using a variety of applications. (Honda, November 17, 2016, public hearing transcript p. 72 line 9 – 21)

8.

Comment: Good morning. Thank you for having me out. I'm Zach Mersch with Mean Green Mowers. And I want to thank ARB for inviting me to speak at this.

Mean Green Mowers is a manufacturer of all-electric commercial products. We range anywhere from zero turns, the big ride-on's, the stand-on's, all the way down to the handheld equipment.

We're a U.S. manufacturer. We manufacture everything in Cincinnati, Ohio. We've recently started selling to Canada, the United Kingdom, and Australia as well.

We went through a stringent CE certification on all of our equipment, so all of our bigger equipment is now CE certified. They didn't know how to certify our equipment, so we had to go through the electrical certification and the mower certification. (MG, November 17, 2016, public hearing transcript p. 74 line 14 – p. 75 line 4)

9.

Comment: Good morning, Chair Nichols and members of the Board. My name is Michael Geller. I'm the deputy director for the Manufacturers of Emission Controls Association. MECA members represent -- we represent manufacturers of a variety of emissions control components for both criteria and greenhouse gas emissions, including evaporative emissions from small off-road engines. (MECA, November 17, 2016, public hearing transcript p. 76 line 2 – 8)

10.

Comment: Hello. My name is Gerry Barnaby and I'm with EGO. I want to thank everybody for inviting us in from Michigan. That's where our design studio is based in large part.

We represent EGO, as I mentioned. I have in my hand the gas tank of the future. It is a battery that will run a string trimmer. And this is for residential at this point. We're engaging in research into the commercial realm. But this will run a string trimmer for about an hour, it will run a chainsaw that can cut down 25 trees of my circumference on a single charge. It will run a blower for over an hour. So the future is here now.

And as Dr. Sperling mentioned in his remarks, as goes California, so goes the world as far as the attitudes towards emissions and environment. And I'm happy to report -- we're exclusive to Home Depot. And at least in the Home Depot realm, we are part of the fastest growing segment of outdoor power, and that is battery power. So the appetite on the part of the consumer is certainly here. (EGO, November 17, 2016, public hearing transcript p. 78 line 9 – p. 79 line 3)

Agency Response to Comments A.1 through A.10: These introductory comments are not directed at the regulations or the process by which they were adopted. ARB appreciates the comments of all interested persons. “SSI” is an acronym for “small spark ignited,” a term sometimes used interchangeably with SORE.

B. Comments of General Support

1.

Comment: I appreciate the ARB's efforts to regulate evaporative emissions for small off-road engines (SORE). (CL, November 10, 2016, letter p.1)

2.

Comment: The undersigned organizations urge the Board to promptly adopt the proposed amendments to the evaporative emissions requirements for small off-road engines. We submit these comments to emphasize two points: (1) pollution from small off-road engines (SOREs) poses substantial health effects; both in its contribution to ozone formation as well as toxic emissions affecting owners and operators, and (2) absent the amendments, the Board's standards will continue to be ineffective in reducing that pollution. (SCC et al., November 14, 2016, letter p.1)

3.

Comment: Kathryn Phillips with Sierra Club California.

Thank you, CARB staff, for working on this rule for as many years as you have. And thank you, Mary, for your calming and encouraging words at the beginning of the meeting.

Sierra Club California fully supports this measure as proposed. And we've submitted a letter with a number of our other colleagues outlining some of those reasons. (SCC, November 17, 2016, public hearing transcript p. 81 line 10 – 19)

4.

Comment: The Manufacturers of Emission Controls Association (MECA) is pleased to provide comments in support of the California Air Resources Board's (ARB's) proposed amendments to the evaporative emission requirements for small spark-ignited off-road engines rated at or below 19 kW (25 hp). We thank ARB for its continuing efforts to develop and implement effective control programs for significant sources of air pollution, including small off-road engines (SORE). We believe the proposed changes to the SORE regulations, including improving the certification procedures for SORE, revising the compliance testing procedure, updating the certification test fuel to represent commercially available gasoline, and aligning aspects of ARB's SORE requirements with those of the U.S. EPA, will help further reduce evaporative emissions from this category of engines, as well as help ensure that the expected reductions under the current SORE standards are met in the real world. (MECA, November 14, 2016, letter p.1)

5.

Comment: We'd like to say that we support these proposed amendments and thank staff for its diligent work in this area. We believe that the proposed changes to the SORE regulations, including improving the certification procedures, revising the compliance testing procedure, and updating certification test fuel to be more representative of commercial available gasoline, and aligning aspects of the SORE requirements with those of the U.S. EPA are an important step forward in helping to ensure that existing evaporative standards are met and real-world emissions reductions are achieved. (MECA, November 17, 2016, public hearing transcript p. 76 line 9 – 19)

6.

Comment: In conclusion, MECA commends ARB for taking important steps to further reduce evaporative emissions from small SI off-road engines and to help ensure that existing SORE standards are met. The proposed regulatory amendments, as well as the upcoming changes to the SORE regulations expected in 2018, are included in ARB's Mobile Source Strategy and will be critical towards helping California and air districts achieve their future SIP commitments for the 80 and 75 ppb national ambient ozone standards. We are committed to do our part to ensure that cost-effective, advanced emission control technologies are available to help meet ARB's SORE requirements. (MECA, November 14, 2016, letter p.4)

7.

Comment: To conclude, MECA would like to thank staff for their diligent work and also for bringing this proposal today. We look forward to working with staff in the future and looking for additional opportunities to help reduce emissions from SORE, small off-road engines, and also to help California meet their air quality goals.

Thank you very much. (MECA, November 17, 2016, public hearing transcript p. 78 line 1 – 7)

8.

Comment: The South Coast District staff is in full support of the proposed amendments to the -- and I have to say small off-road engine because we use SORE a lot.

As you're aware, we're focused on NO_x reductions to meet air quality standards. However, in our analysis for attainment of the ozone standards, we still need some VOC reductions in order to get there. But more importantly, we're -- we want to continue to see reduction in gasoline evaporative emissions, because there's air toxics exposure to the public and continue to see that.

When we had our air measurements program as part of our multiple air toxics exposure study, we found that benzene and butadiene, two of the key components of gasoline emissions, are about 16 percent of the total risk in the South Coast Basin. So it's very important that we see further reduction from VOC emissions.

And I know the industry is asking that you consider this item as part of the 2018 proposed set of amendments to the overall regulation. Because of the first-line exposure we believe that we need to adopt these amendments today. So we urge your board to adopt the regulations -- or proposed amendments as they're proposed today.

And we look forward to working with you on the future regulations. Thank you. (SCAQMD, November 17, 2016, public hearing transcript p. 56 line 10 – p. 57 line 11)

9.

Comment: My name is Daniel Mabe, and I am the founder and president of the American Green Zone Alliance. And we are in support of 16-10-2.

I just want to introduce who the American Green Zone Alliance is. Our mission is to reduce carbon emissions from the grounds maintenance industry and improve working conditions for the landscape maintenance workforce and surrounding communities. AGZA helps transition traditional carbon-powered grounds maintenance operations to zero and near-zero operations.

A few ways that we do this: We advocate for policies and practices that address the many health and environmental issues of small off-road engines; we train, educate, and accredit grounds crews and managers as AGZA-accredited service providers; and we also partner with private and city property owners to establish dedicated areas maintained zero- to near-zero-emission operations as certified green zones.

Most recently, we celebrated the creation of the nation's first AGZA green zone city down in South Pasadena. This is dedicated all-electric, zero emissions for routine maintenance, and it's a total of 41 serviceable acres.

And we are also putting the finishing touches on the nation's first AGZA-certified golf course using electric equipment; and then ARB's own Tier 4 compliant tractor options.

We just want everyone to know that the equipment out there is actually up to the task of scaling to multi-acre operations.

AGZA applauds the advances in batteries and industrial design that parallels the electric car industry from all of the manufacturers represented here today. But most notably we've been able to work with all-electric

manufacturers such as Mean Green, Green Works, and have done some really good work with the Stihl equipment for our dedicated green-zone areas. We can definitely confirm that the latest battery-electric tools have commercial power, performance, and run times.

We also want to introduce a technology working with an aerospace company. It's a software that actually monitors the battery, motor, power, speeds, and run times of the equipment. It also tracks in real-time emission reductions and will give you a readout of how much it costs to operate the equipment on that very same day.

We hope that this technology will be adopted some day to incentivize participation in the California cap-and-trade economy. We are very honored to be here and we really thank you for your dedication to zero-emission and near-zero-emission technology for the grounds maintenance industry.

Thank you. (AGZA, November 17, 2016, public hearing transcript p. 57 line 15 – p. 59 line 16)

10.

Comment: And good morning, Chair Nichols and members. Bonnie Holmes-Gen with the American Lung Association in California. And I just have to say that it's happy -- I'm very happy to be here with you all moving forward with good work to protect public health in California Today. And I'm here because the American Lung Association in California is supporting the proposed amendments today and urge you to move forward to adopt these evaporative emission requirements and updates for small off-road engines.

We appreciate the extensive studies and work that's been done by the Air Board over the years and coordination and in outreach to the regulated community.

It's clear at this point that there is a strong lack of compliance and the standards are failing to protect public health as is. So we've -- these updates are required. (ALA, November 17, 2016, public hearing transcript p. 82 line 23 – p. 83 line 14)

11.

Comment: Good morning. My name is Kevin Walsh. I operate a small landscape service company here in the Sacramento area that services residential and commercial customers. We use only battery- or people-powered equipment. I am here in support.

Using this type of equipment has both advantages and disadvantages. Some of the advantages are obviously their lack of fumes, emissions, no -- no emissions. The equipment that we experience requires little or no service, so there's a -- little maintenance costs.

And the disadvantages, I would say, in my experience, is that the equipment using battery power has limited capability in that the cutting quality is not as good as a -- as a gas-powered mower.

For example, I would have to mow, in my opinion, two or three times in once -- over -- take one pass as compared to a gas-powered mower with using the equipment that I have.

And the battery life. And the cost of the batteries is -- the initial cost is high compared to obviously gas powered.

And also, using -- I have -- it's difficult to find quality -- I know there are a few manufacturers, but quality equipment in particular lawn mowers larger than 21 inch. (KW, November 17, 2016, public hearing transcript p. 84 line 9 – p. 85 line 8)

12.

Comment: Thank you, Madam Chair, and good morning, Board members. I don't know if I should call this a SORE subject, but certainly –

But clearly it is an important subject, and we support the proposal from the staff. We know that the emissions from this sector are really significant. In fact, I was really struck by the slide in the staff presentation that showed emissions from this sector actually passing -- surpassing emissions from light-duty vehicles in the South Coast in a fairly short time frame. So we really need to get this under control both for local and regional air quality. And also I think we have to keep in mind the health of the workers who are operating this equipment in many cases all day long and exposed to those emissions. (CCA, November 17, 2016, public hearing transcript p. 86 line 2 – 19)

Agency Response to Comments B.1 through B.12: ARB appreciates the expressions of support for the proposed amendments.

C. Comments of General Opposition

1.

Comment: EMA has worked with CARB staff and the Board since the origin of CARB regulations for SSI engines, including the original evaporative regulations being revised in this rulemaking.

EMA has three areas of significant concern with the proposed regulation and several technical concerns, all of which are identified in the written comments submitted earlier this week.

Despite EMA's efforts to work with CARB staff, the three areas of significant concern remain, and EMA strongly requests the Board reject staff's proposed regulatory changes until such time as those concerns can be addressed. (EMA, November 17, 2016, public hearing transcript p. 68 line 16 – p. 69 line 3)

2.

Comment: The proposed SSI Evaporative Regulation Amendments include three major categories of changes: (i) change of the certification test fuel to E10; (ii) changes to the certification process (and related test methods) used to demonstrate compliance; and (iii) changes to the CARB compliance determination and related enforcement activity. EMA member companies have significant concerns with all three of the three major categories. (EMA, November 17, 2016, letter p. 1)

3.

Comment: EMA appreciates the opportunity to provide these comments. It is very important that significant changes are made to the proposed amendments prior to their adoption. EMA and our member companies will work with CARB Staff to make the required changes through the appropriate regulatory notice and comment process. These changes will provide the improvements in certification procedures, compliance procedures, and updated certification test fuel expected from the SSI Evaporative Regulation Amendments. (EMA, November 17, 2016, letter p. 11)

Agency Response to Comments C.1 – C.3: ARB appreciates EMA's participation in the regulatory process. ARB staff has responded to all of EMA's comments in this FSOR and addressed EMA's concerns in agency responses and in the proposed amendments. For the reasons supporting the proposed amendments to the regulations and provided in response to EMA's comments, ARB declined to postpone adopting the amendments. However, significant changes have been made to the proposed amendments in response to EMA's comments.

4.

Comment: Based on the concerns detailed below, OPEI requests the Air Resources Board postpone a decision on the SORE evaporative emissions amendments proposed rule until (1) an updated Economic Impact Analysis/Assessment can be completed, (2) a new validation study can be commissioned and (3) new validation study results can be properly analyzed versus the SORE evaporative emissions model to properly determine if SORE equipment is meeting California's air quality goals. (OPEI, November 17, 2016, letter p.1)

5.

Comment: OPEI is deeply concerned with today's proposed amendments for a number of reasons.

Foremost, procedurally the rulemaking is deficient because the record lacks the required economic impact analysis and assessment for the proposed compliance strategy changes. Specifically the record fails to account for an estimated 64 million to 224 million related to new SHED testing due to increased stringency directly related to compliance being determined by diurnal performance testing and limits.

Additionally, OPEI is concerned that the proposal looks to eliminate stand-alone design-based certification and compliance strategy that the majority of SORE equipment manufacturers rely on. OPEI is concerned that the conclusions, support, and rationale for the proposal, as outlined in the September staff report, are rooted in widely variable and unreliable test data and based largely on unrepresentative sample size.

In light of these new concerns, OPEI requests the Board to postpone a decision on today's proposed amendments until a new required cost analysis can be completed, a new validation study can be commissioned with more reliable data and more representative sample population, and the new data is applied to the off-road model in order to understand the effectiveness of today's regulations in meeting ARB's overall air quality goals. (OPEI, November 17, 2016, public hearing transcript p. 60 line 21 – p. 61 line 21)

6.

Comment: As a result of the concerns outlined above, OPEI requests the Air Resources Board postpone a decision on the SORE evaporative emissions amendments proposed rule until (1) an updated Economic Impact Analysis/Assessment can be completed, (2) a new validation study can be commissioned and (3) new validation study results can be properly analyzed versus the SORE evaporative emissions model to properly determine if SORE equipment is meeting California's air quality goals. (OPEI, November 17, 2016, letter p.5)

Agency Response to Comments C.4 – C.6: ARB appreciates OPEI's participation in the regulatory process. ARB staff has responded to all of OPEI's comments in this FSOR and addressed OPEI's concerns in agency responses and in the proposed amendments. For the reasons supporting the proposed amendments to the regulations and provided in response to OPEI's comments, ARB declined to postpone adopting the amendments. However, significant changes have been made to the proposed amendments in response to OPEI's comments.

The initial Economic and Fiscal Impact Statement (Form 399) for these amendments included a detailed estimate of the costs associated with the proposed amendments, as required by the Administrative Procedure Act (APA). The updated Economic and Fiscal Impact Statement (Form 399) for these amendments includes revisions based on OPEI's comments, as discussed further in agency responses to Comments Q.1 – Q.14 and in the Economic and Fiscal Impact Statement (Form 399) for these amendments.

OPEI's comments on the continued availability of design certification in the proposed amendments and on the validation studies designed and conducted jointly by ARB and manufacturers are also addressed in detail in this FSOR (responses to Comments F.1 – F.6 and G.1 – G.26).

7.

Comment: In an attempt to resolve many of these concerns, OPEI and EMA met with ARB, including participation in working groups and workshops, on approximately 10 occasions since September 2015. Following the first publication of the draft amendments in May 2016, OPEI and EMA promptly provided an alternative proposal, focusing largely on solutions to address the quality issues Industry believes to be responsible for non-disputed non-compliant products, while aligning certification limits with EPA regulations, as opposed to ARB staff's proposal to eliminate separate performance and design-based certification strategies. Much to Industry's dismay, with its September 2016 proposed amendments, ARB staff simply cherry-picked industry's proposal, resulting in additional unsupported costs and burdens.

Despite the concerns above, OPEI and EMA continued to be engaged with ARB staff to develop solutions to potential concerns of noncompliance. On October 28, OPEI and EMA provided a detailed list of comments, highlighting the major concerns above, as well as a host of esoteric concerns with the proposed amendments. Unfortunately ARB staff and Industry were unable to come to agreement on several key points. The list of unresolved issues is included as Annex A. (OPEI, November 17, 2016, letter p.3)

8.

Comment: Industry has been committed to working with ARB throughout this process, meeting with staff on more than 10 occasions since last September. We appreciate staffs efforts and commitment to working with industry to find common ground. However in absence of a complete cost analysis, and in new light of the Validation Study, several challenges remain with the proposed amendments and more time is needed for ARB and industry collaboration to resolve issues. (OPEI, November 17, 2016, letter p. 5)

9.

Comment: In closing, industry's been committed to working with ARB throughout the process, meeting with staff on more than ten occasions.

OPEI appreciates staff efforts, and is committed to working with industry and committed to working with ARB staff. This is especially true for the less than 80 cc category where we have found common ground on most issues. Thank you, staff.

However, in the absence of a complete cost analysis, in light of new concerns surrounding the validation study, several challenges remain with the proposed amendments and more time is needed.

We ask the Board to postpone a decision on the SORE evaporative emissions rulemaking today. (OPEI, November 17, 2016, public hearing transcript p. 67 line 4 – p. 67 line 17)

10.

Comment: In addition to these concerns, OPEI and EMA have provided a detailed list of comments and concerns with the proposed Regulation Order, Test Procedures and Certification procedures. The list of unresolved issues is included as Annex A. (OPEI, November 17, 2016, letter p. 6)

Agency Response to Comments C.7 through C.10: ARB appreciates OPEI's participation in the regulatory process. The proposed amendments published with the Staff Report incorporated numerous changes in response to OPEI and EMA's June 30, 2016, comments on staff's May 12, 2016, draft regulation order. The incorporated changes were consistent with ARB's stated goals of improving compliance with existing diurnal emission standards and enabling effective enforcement of those standards. ARB declined to incorporate elements of OPEI and EMA's proposal such as the relaxing of emission standards, which, combined with the low compliance rate, would result in a smaller portion of the originally-projected emission reductions being realized. Because OPEI declined to submit comments on the May 12, 2016, draft certification and test procedures, ARB did not have an opportunity to resolve any concerns OPEI had with the draft certification and test procedures prior to publication of the proposed certification and test procedures with the Staff Report.

As a result of approximately nine additional meetings with OPEI, EMA, and/or manufacturers between publication of the Staff Report and the November 17, 2016, public hearing, ARB considered OPEI's concerns and comments, including those "esoteric" concerns referenced in Comment B.7, and agreed to make changes to the proposed amendments to address many of OPEI's concerns and comments. ARB had agreed to modify the proposed amendments in 15-day changes in response to many of the comments in OPEI's "Annex A" prior to OPEI's submission of comments on

November 17, 2016, although it was understood at the time that publication of the 15-day changes would not occur until sometime in 2017.

For the reasons supporting the proposed amendments to the regulations and provided in response to OPEI's comments, ARB declined to postpone adopting the amendments.

D. Comments on Further Regulation of Small Off-Road Engines

1.

Comment: I would urge ARB also to consider regulating the overall combustion emissions and use of these engines, particularly on "spare the air" days in the Bay Area and other major populated areas.

You know better than me the inefficiency of SOREs as combustion engines, and that one lawn mower is the equivalent of more than 10 cars. In my area of San Mateo, it is not uncommon to see many lawn and garden services working daily (I counted 13 on a 4 mile morning jog through my neighborhood). Considering that each of these "mow and blow" services use multiple SORE-powered machines to do their work, the impact on our local pollution and that of the wider Bay Area is potentially significant.

I would urge ARB to consider regulations to improve the combustion-efficiency of SOREs, AND to regulate their use particularly on "spare the air" days. In addition, I would like to see greater encouragement of the use of electric, or battery-powered lawn and garden equipment to reduce pollution. (CL, November 10, 2016, letter p.1)

Agency Response: ARB first adopted exhaust emission standards for SORE in 1990. Three tiers of exhaust emission standards implemented between 1995 and 2008 have significantly reduced emissions on an individual engine basis. As discussed in the Staff Report, additional emissions reductions are needed to help achieve throughout California the National Ambient Air Quality Standards for ozone and particulate matter. In 2020, ARB staff will propose tightened emission standards to achieve those emission reductions.

The impact of landscaping services on overall emissions from SORE is increasingly important and will be considered when developing new emission standards and strategies for shifting to zero-emission equipment. Restrictions on use of (non-zero-emission) SORE equipment during Spare the Air days are within the authority of California's 35 air districts and are outside the scope of these proposed amendments, which focus on ensuring compliance with existing emission standards.

2.

Comment: Companies that manufacture evaporative emission controls have responded to the challenge of reducing hydrocarbon (HC) evaporative emissions from various mobile sources, including SORE. Through their efforts, a wide range of cost-effective technologies have been developed to reduce evaporative emissions. There are varying levels of complexity and efficacy of these controls, with the most advanced systems equipped on partial zero-emission vehicles (PZEVs) being certified to California's LEV III emission standards. The key technologies that control permeation emissions in passenger vehicles include fuel tanks made of low permeation polymers, multilayer co-extruded hoses, and low permeation seals and gaskets. Technologies designed to control diurnal, hot soak, and refueling HC emissions include advanced carbon canisters and high working capacity activated carbon. Spark-ignited off-road equipment such as SORE can benefit from much of these same advanced evaporative emission control technologies that are currently being applied to passenger vehicles in the U.S.

Separate from the SORE proposed amendments to be considered by the ARB Board at the November 17, 2016 Board hearing, ARB staff has said they plan to propose new SORE regulations in 2018 that will be designed to achieve ROG, NOx, PM, and greenhouse gas reductions of 80% by 2031. Staff said that it is likely that a combination of tightened exhaust and evaporative emission standards, incentives for manufacturers and consumers to increase the use of zero-emission equipment, and enhanced compliance testing will be needed to reduce emissions from SORE and achieve ARB's air quality goals. In support of the 2018 rulemaking proposal, staff intends to begin exhaust emission testing of SORE equipment in 2017. Staff has said they will first attempt to validate manufacturers' certification data, followed by additional testing to determine what additional reductions can be achieved using advanced three-way catalysts and/or various engine technologies (e.g., fuel injection). MECA remains committed to supporting this effort with catalyst technology.

The three-way catalytic converter has been the primary emission control technology on light-duty gasoline vehicles since the early 1980s. The use of a three-way catalyst, in conjunction with an oxygen sensor-based, closed-loop fuel delivery system, allows for the simultaneous conversion of HC, NOx, and CO emissions produced during the stoichiometrically calibrated air/fuel combustion process of a spark-ignited internal combustion engine. Although the primary components and function of a three-way catalytic converter has remained relatively constant during its more than forty years of use on light-duty vehicles, each of the primary components (catalytic coating, substrate, and mounting materials) has gone through a continuous evolution and redesign process aimed at improving the overall performance of the converter while maintaining a competitive cost effectiveness of the complete assembly. Current state-of-the-art, stoichiometric gasoline

emission control systems are defined by LEV III PZEV and SULEV (Super Ultra-Low Emission Vehicle) light-duty vehicles sold in the U.S. market.

MECA believes that the use of advanced catalyst technology can help SORE meet tighter exhaust emission standards in the future. The types of issues that have been raised in the past by engine and equipment manufacturers regarding the use of catalyst technology on SORE, such as heat management, packaging, poisoning, and durability, are straightforward engineering challenges that are well understood and have been readily addressed, as has been clearly demonstrated over the past several decades in which catalyst technology has been successfully applied to a wide variety of vehicles and equipment. (MECA, November 14, 2016, letter p. 2-3)

3.

Comment: MECA members that manufacture evaporative emission controls have responded to the challenge of reducing hydrocarbon evaporative emissions from mobile sources.

A wide range of cost-effective technologies have been developed to reduce hydrocarbon evaporative emissions, such as permeation emissions, diurnal, hot soak, and refueling hydrocarbon emissions. These are used on passenger cars. And these can also benefit SORE equipment.

MECA remains committed to supporting staff's continuing effort to demonstrate the potential for achieving additional emissions reductions from small off-road equipment, small off-road engines through the use of advanced engine and catalyst technology in the future.

We believe that the use of advanced catalysts, three-way catalyst technology, which is derived from 40 years of experience on passenger cars and motorcycles, can help SORE to meet tighter exhaust emission controls.

The types of issues that have been raised in the past such as heat management, packaging, poisoning, as well as durability, have been readily addressed. (MECA, November 17, 2016, public hearing transcript p. 77 line 4 – 25)

Agency Response to Comments D.2 and D.3: ARB agrees that technologies used in passenger cars and other vehicles and equipment to reduce evaporative emissions can also be used in SORE and will continue to be important in meeting existing and future emission standards to reduce evaporative emissions from SORE. ARB also welcomes MECA’s input and expertise in the area of reducing exhaust emissions from SORE and looks forward to working with MECA and manufacturers when developing future emission standards for SORE.

4.

Comment: EMA supports CARB's objective to align the test fuel utilized for evaporative compliance with the test fuel utilized for exhaust emission compliance. That said, the majority of the changes being proposed under the SSI Evaporative Regulation Amendments are ill-conceived attempts to improve compliance that are poorly timed given CARB stated intention to change the SSI exhaust and evaporative emission standard requirements in a rulemaking activity proposed to take place in 2018, prior to the changed proposed becoming effective. Many of the changes proposed will shift manufacturers' R&D focus away from the development of products meeting these future regulatory requirements to develop products that meet the proposed regulation changes. (EMA, November 17, 2016, letter p. 1)

5.

Comment: EMA supports CARB's objective to align test fuel utilized for evaporative compliance with test fuel utilized for exhaust emission compliance. That said, the majority of the changes being proposed under the SSI evaporative regulation amendments are ill-conceived attempts to improve compliance. Many of the changes proposed will shift manufacturers' R&D focused away from the development of products meeting future regulatory requirements to develop products that meet the proposed regulatory changes. (EMA, November 17, 2016, public hearing transcript p. 69 line 4 – 13)

6.

Comment: Finally, OPEI is greatly concerned with the timing of the rulemaking. In addition to the proposed amendments, ARB is concurrently working on a 2018 rulemaking package that looks to further reduce SORE evaporative emissions and reduce SORE exhaust emissions. Today's proposed amendments, scheduled to be implemented in 2020, will create an overlap in new regulations, and may impede the ability to meet the 2020 requirements and fully engage in the 2018 rulemaking activities. Industry is currently working on a multi-year plan to shift exhaust emissions certification fuel to E10 by 2020. The certification fuel change demands significant R&D, certification and compliance resources to recertify engine families, creating significant hardships in meeting the 2020 proposed amendments, and participating in the 2018 rulemaking activities. (OPEI, November 17, 2016, letter p. 3)

Agency Response to Comments D.4 – D.6: ARB appreciates EMA's support for updating the certification test fuel for evaporative emissions from SORE to contain 10 percent ethanol, reflecting gasoline sold in California and matching the fuel that will be required for SORE exhaust emissions certification in 2020. ARB believes that EMA's and OPEI's comments on the timing of the currently proposed amendments in light of potential future regulations are not directed at the process by which the proposed

amendments were adopted or at the substance of the proposed amendments. These comments speculate on manufacturers' research and development efforts to meet potential future standards which have not been proposed, and seem to be concerned more with a future rulemaking than with the current one.

The concerns expressed in the comments have been addressed, nonetheless. The proposed amendments published with the Staff Report incorporated numerous suggestions from EMA and OPEI. The proposed amendments included with this FSOR incorporate additional suggested changes from EMA and OPEI to reduce costs and address other concerns expressed by EMA and OPEI in comments. EMA suggests that complying with the proposed amendments would require manufacturers to shift research and development efforts away from developing products to meet standards that have not yet been adopted, but the proposed amendments are largely intended to improve compliance with emission standards adopted in 2003. The existing diurnal emission standards went into effect between 2008 and 2012, depending on the displacement category. Since the proposed amendments do not change the standards, products should have already been designed that meet the existing standards.

ARB has not received any indication from manufacturers (other than EMA's comments) that they would spend resources to meet standards which have not yet been adopted before spending those resources to meet existing standards. The implication of such a course of action would be that, even in the absence of the proposed amendments, a manufacturer would be out of compliance with current emission standards while preparing to meet future emission standards that have not been adopted. ARB has not received any indication from manufacturers that they are intentionally out of compliance with the existing emission standards. Without any evidence to support EMA's comment regarding manufacturers' research and development efforts, it cannot be considered to be a likely scenario.

At the November, 17, 2016, public hearing, ARB staff indicated to the Board that a proposal to achieve additional emissions reductions from SORE, including tightened exhaust and evaporative emission standards and strategies to ensure a significant increase in introduction of zero-emission SORE equipment, would be delayed from 2018 to 2020. In the intervening time, staff will conduct technology assessments, update the emissions inventory, and report to the Board in 2018 on the results of the zero-emission equipment technology assessment.

Improving compliance with existing emission standards and developing tightened emission standards are not mutually exclusive, nor do they have to be pursued in series. While quality control and quality assurance improvements may be needed to ensure that SORE sold to consumers in California have the same evaporative emissions as the units tested for certification, the proposed amendments do not change the emission standards. Increasing compliance with the existing emission standards will

complement, not impede, progress toward meeting future tightened emission standards. Any research and development work that a manufacturer initiates to reduce evaporative emissions from SORE will facilitate compliance with existing and future emission standards. The proposed requirement to use E10 certification test fuel for evaporative emissions for model year 2020 coincides with the requirement to use this same fuel for exhaust emissions for model year 2020 that was adopted by ARB in 2011.

7.

Comment: So with that being said, CARB is looking to make a commitment to reduce lawn-care equipment by 80 percent by 2030. I think with tax credits and green incentives, Mean Green believes together we can make this goal much sooner.

I'd like to thank you for having me out. If you have any questions, I'd be happy to answer them. (MG, November 17, 2016, public hearing transcript p. 75 line 19 – 25)

Agency Response: ARB appreciates Mean Green Mowers' participation in the rulemaking process and willingness to help achieve additional emission reductions from SORE. Incentives will be considered when developing a proposal to achieve the needed emission reductions.

8.

Comment: You'll hear from a gentleman a couple speakers hence who runs a lawn and garden service, Completely Green. He says he's turning customers away. And he's in the commercial application.

So I think that your work is honorable. Your mission is clear.

And I want to end with a quick story about a kid I just met down Louisville, Kentucky. We're at GIE, and he came up. He's a 10-year-old kid. And for the effort of getting straight A's in a year at school, his dad took him to GIE because since the age of 6 the kid has been a lawn and garden nut. He pulls all of his gas-powered equipment behind him in a cart behind his bicycle. He's got what he said were six solid accounts, two floaters.

And I turned him onto the battery power. And he said, "Sir, this is every bit as powerful as gas." And I said, "Well, what does that mean to you as a kid?" And he goes, "Well, the environment is my workplace. I'm in charge of tidying it up. And if I continue with gas, my thought is at the age of 10" - and I thought this was so profound - "I will not have a workplace in the future. And so it is my job to keep it clean, keep it green."

So thank you for doing the work that you do. And I fully support the bill in front of you today.

Thank you. (EGO, November 17, 2016, public hearing transcript p. 79 line 4 – p. 80 line 3)

Agency Response: ARB appreciates EGO's participation in the rulemaking process and support for the proposed amendments.

9.

Comment: Secondly, just to underscore. I know South Coast was up here, but there are other air districts that have to comply and submit plans to you. They go into the State Implementation Plan. It's very important for them to be able to depend on these rules to be enforceable, enforced, and effective, for them to be embraced and qualify for being included in their air quality plans.

Without these changes, the local air districts can't really rely on those rules to help meet their air quality goals. So, again, just to restate that Sierra Club California and a number of other environmental organizations, including some who will be testifying soon, support this rule.

Thank you. (SCC, November 17, 2016, public hearing transcript p. 82 line 8 – 21)

Agency Response: ARB appreciates Sierra Club California's participation in the rulemaking process and support for the proposed amendments and future emission reductions.

10.

Comment: And just as with other combustion sources, we believe it's critical to move forward to cleaner and cleaner options and zero emissions. That's the ultimate goal here.

So my quick summary would be, SORE is core to our State's air quality strategy. There are many green and economical options available. And, in fact, from my experience, the green options are much preferable to use.

The State and the air districts need these standards to progress toward attainment. The breathers need these standards to reduce the burden of air pollution and lung disease. So its a win-win on multiple fronts and we urge you to move ahead. (ALA, November 17, 2016, public hearing transcript p. 83 line 20 – p. 84 line 7)

Agency Response: ARB appreciates the American Lung Association in California's participation in the rulemaking process and support for the proposed amendments and future emission reductions.

11.

Comment: So what I would like to see going forward is an improvement in the performance, in the batteries, the cutting quality, the battery life. And also if I go to an automobile or -- automobile dealership and walk in and tell them I want to buy an electric vehicle, I will be hit with rebates from -- at least here, from the state, federal, and local level. You don't get that same experience when you buy an electric mower. There are -- from what I have experienced, there was no -- very – no rebates or no incentives.

So going forward, the success of our company, Fresh Air Yard Care, is dependent on the quality and the breadth of equipment that uses electric or battery power.

Thank you. (KW, November 17, 2016, public hearing transcript p. 85 line 9 – 22)

Agency Response: ARB appreciates Kevin Walsh's participation in the rulemaking process, sharing about his experience with zero-emission lawn and garden equipment and feedback on needed improvements. Incentives will be considered when developing a proposal to achieve future emission reductions.

12.

Comment: And, finally, I think ultimately what we need to do is move to zero-emission equipment. And therefore, I really want to thank all the companies that have come here today with their zero-emission equipment for these off-road engines.

Thank you. (CCA, November 17, 2016, public hearing transcript p. 87 line 1 – 6)

Agency Response: ARB appreciates Coalition for Clean Air's participation in the rulemaking process and support for shifting to zero-emission equipment to reduce emissions from SORE.

E. Comments on Health Effect of Small Off-Road Engines

1.

Comment: Small off-road engines—lawn-mowers, leaf-blowers, and the like—pose serious health risks. First, while cars, trucks, buses, and power plants often garner the majority of attention when it comes to smog pollution, small off-road engines contribute significantly to poor air quality across California. The staff report notes that SOREs will emit 45 tons of reactive organic gas and toxic air contaminant emissions this year, surpassing the emissions from 10,000 gas stations.

These emissions, when combined with nitrogen oxides, contribute to elevated smog levels across the state, particularly in the extreme non-attainment zones in the San Joaquin Valley and South Coast Air Basins. Exposure to ozone in those elevated concentrations result in "decreased lung function and respiratory symptoms," as well as "more serious health effects" such as "asthma" [*Mississippi v. EPA*, 744 F.3d 1334, 1339 (D.C. Cir. 2013).].

Small off-road engines make a particularly large contribution to ozone pollution in the South Coast Air Basin [California Environmental Protection Agency, Air Resources Board, Staff Presentation: Public Workshop to Discuss Proposed Changes to the Small Off-Road Engine Regulations (Nov. 2 & 4, 2015) ("November Workshop Presentation") at 6 (noting that 40% of 2015 SORE Emissions occurred in South Coast)]. The region recently recorded the worst ozone pollution in the country [Memorandum from Janet G. McCabe to Regional Administrators (October 1, 2015) at 7 (titled "Implementing the 2015 Ozone National Ambient Air Quality Standards, and stating that "South Coast still has the highest 2012-2014 8-hour design value in the nation at 102 ppb).]. As the U.S. EPA has observed, "[m]ore than 25 million people in California breathe air that does not meet the 2008 ozone standards" [Memorandum from Janet G. McCabe to Regional Administrators (October 1, 2015) at 7 (titled "Implementing the 2015 Ozone National Ambient Air Quality Standards, and stating that "South Coast still has the highest 2012-2014 8-hour design value in the nation at 102 ppb).]. In the future, SORE emissions will (absent further regulation) make up a greater proportion of ozone-forming pollutants in the South Coast, as regulation of light-duty vehicles improves [Staff Report at xii-xiii ("[A]bsent any new regulations SORE emissions … by 2031 would be 77 percent of those from light-duty vehicles").]. In order to meet the Clean Air Act's mandatory requirements for the South Coast, those emissions will need to be substantially reduced [See South Coast Air Quality Management District Revised Draft 2016 Air Quality Management Plan (October 2016) at 4-40 (relying on ARB's adoption of "tighter exhaust and evaporative emission standards," and "enhance[ment of] current emissions standards" for SORE, for are to progress towards meeting air quality standards).]. A necessary first step is ensuring that the Board's existing standards are meaningfully applied and enforced.

SORE also produce substantial toxic pollution—benzene, which causes neurological, immunologic, and hematologic effects, as well as 1,3 butadiene and acetaldehyde, which are carcinogens [Staff Report at 84; Jamie Banks & Robert McConnell, "National Emissions from Lawn & Garden Equipment (U.S. EPA 2015).]. Evaporative toxic emissions are of particular concern given that they predominantly occur while SOREs are being stored, in garages often directly attached to homes [Staff Report at 84]. And landscape and garden workers who operate SORE equipment for hours daily are disproportionately exposed to toxic hazards from that equipment; many of those workers are of low-income, minority groups already disproportionately exposed to pollution-related and other health

hazards [See Death on the Job: The Toll of Neglect, a National State-by-State Profile of Worker Safety and Health in the United States (A.F.L.-C.I.O. 2016 25th ed.) at 3, 9 (noting high proportion of Latino injuries and fatalities in landscaping industry, and noting that "chemical exposures pose serious risk to workers, but are largely unregulated").]. SOREs thus pose substantial health risks, requiring the Board's urgent attention. (SCC et al., November 14, 2016, letter p. 1 – 2)

2.

Comment: I just want to highlight two of them. And, that is, that most of these evaporative emissions occur while an engine is off and sitting in somebody's garage. And most garages in California homes are attached. They serve as -- do double duty as man caves, as family rooms, as children's playrooms. These are not places where we want these kind of evaporative emissions to be available and to be exposing children and men and others.

So they have serious health effects. That includes lung disease, heart disease, cancer. So, again I just want to underscore the importance of this measure because of these sorts of health effects and the relatively close location to where people live. (SCC, November 17, 2016, public hearing transcript p. 81 line 20 – p. 82 line 7)

Agency Response to Comments E.1 and E.2: ARB appreciates the comments from Sierra Club California et al. regarding health effects from SORE emissions. ARB takes the health risk posed by SORE seriously and will conduct an exposure study to assess that risk. The results will be shared with the public and considered when developing proposals to achieve additional future emission reductions from SORE.

3.

Comment: LAWN MOWER EMISSIONS FACTS

*According to an EPA study, one 3hp lawn mower emits the same air pollution as 11 cars driving at 55 mph. Each additional HP is calculated with a linear use equation.

Each 1 HP from a lawn mower= 3.67 CARS AT 55 MPH EMISSIONS

COMMERCIAL ZTR GAS MOWER

24 HP COMMERCIAL ZTR MOWER= 88 CARS AT 55 MPH EMISSIONS (= 4,840 car miles each hour)

24 HP ZTR MOWER@ 3.5 HRS (NATIONAL AVERAGE/DAY)= 308 CARS AT 55 MPH/DAY= 16,940 MILES CAR EMISSIONS/DAY

24 HP ZTR USED 350 HOURS/YEAR= 1,694,000 CAR MILES OF EMISSIONS/YEAR

1,694,000/12,000 MILES (AVERAGE ANNUAL CAR MILES)= 141 CAR EMISSIONS PER YEAR FOR EACH COMMERCIAL ZTR MOWER

RESIDENTIAL GAS RIDING TRACTOR MOWER

18 HP RIDING MOWER= 66 CARS AT 55 MPH EMISSIONS (= 3,633 car miles each hour)

18 HP RIDING MOWER@ 1.5 HRS (NATIONAL AVERAGE/WEEK)= 99 CARS AT 55 MPH/WEEK= 5,445 MILES CAR EMISSIONS/WEEK

18 HP RIDING MOWER USED 50 HOURS/YEAR= 181,650 CAR MILES OF EMISSIONS/YEAR

181,650/12,000 MILES (AVERAGE ANNUAL CAR MILES)= 15 CAR EMISSIONS PER YEAR FOR EACH RESIDENTIAL RIDING MOWER (MG, November 17, 2016, written comments p.1)

Mean Green's written comments also included retail price lists for its products.

Agency Response: ARB appreciates Mean Green Mowers' sharing price lists and information on lawn mower emissions. ARB has not confirmed the accuracy of the calculations in the comment.

4.

Comment: We've recently partnered with one of the largest landscape companies in the country, with a purchase of over 200 mowers to be delivered this spring.

And we've also had programs with South Coast and the Bay Area districts as well over the past three years.

We also -- Mean Green's proud to bring the electric advantage across the country. The electric advantage doesn't only include zero emissions, but also includes zero gas, low noise, and low maintenance. So not only does it have to do with zero emissions but the operator, vibrations - there's a lot of different things involved in this as well.

So you can reduce, you know, operator health as well with going with electric equipment. (MG, November 17, 2016, public hearing transcript p. 75 line 5 – 18)

Agency Response: ARB appreciates Mean Green Mowers' participation in zero-emission lawn and garden equipment programs with South Coast Air

Quality Management District and Bay Area Air Quality Management District as well as the reminder of the numerous advantages of using zero-emission equipment versus gas-powered equipment.

5.

Comment: We are of course very concerned about the substantial health impacts of these emissions, the contribution to elevated smog levels across the State, particularly in extreme nonattainment areas like the San Joaquin Valley and the South Coast Air District. (ALA, November 17, 2016, public hearing transcript p. 83 line 15 – 19)

Agency Response: ARB appreciates the comments from the American Lung Association in California regarding health effects from SORE emissions. ARB takes the health risk posed by SORE seriously and will conduct an exposure study to assess that risk. The results will be shared with the public and considered when developing proposals to achieve additional future emission reductions from SORE.

F. Comments Regarding Design Certification

1.

Comment: MECA supports staff's proposal to subject design-certified SORE to diurnal emission standards in compliance testing, as well as to align the requirements for compliance testing for design-certified SORE with the certification testing requirements for performance certification. As noted in ARB's Staff Report for the proposed amendments, this will give ARB the ability to enforce the diurnal emission standards for all engines with displacement greater than 80 cc, as well as enable ARB to conduct compliance testing on a greater number of evaporative families.

MECA also supports ARB's proposed changes to the design-certification option aimed at helping evaporative families using this method to more likely meet the diurnal emission standards. These changes include requiring fuel tanks to be tested in a configuration that represents their real-world use (including sealing with a fuel cap), and applying the fuel line permeation emission standard to fuel lines that are used to connect carbon canisters to fuel tanks and to return unused fuel to the fuel tank. Other supported changes include requiring carbon canisters to be installed so that the carbon will not be exposed to liquid fuel or water, pressure testing all production fuel tanks, and testing fuel line assemblies to ensure the connections will remain secure throughout the useful life of the engine on which they are installed. (MECA, November 14, 2016, letter p. 1 – 2)

2.

Comment: MECA supports ARB's proposed changes to the design certification option, to require testing of evaporative emission control components and a configuration that represents their real-world operation, which will ensure robustness of these technologies.

In addition, testing to make sure components are assembled and connected correctly will result in greater certainty that evaporative emissions will be controlled throughout the engine's full useful life. (MECA, November 17, 2016, public hearing transcript p. 76 line 20 – p. 77 line 3)

Agency Response to Comments F.1 and F.2: ARB appreciates MECA's support for the proposed amendments to the certification and compliance testing requirements. The requirements to test fuel tanks with fuel caps and to use low-permeation fuel lines for connections to carbon canisters were removed in 15-day changes to provide flexibility requested by OPEI and EMA while still ensuring compliance with the diurnal emission standards.

3.

Comment: In September 2003 ARB adopted evaporative emission regulations for small off-road engines ("SORE"). The final 2003 rule resulted in dual certification strategies, performance-based and design-based for the >80cc category, based on Industry feedback related to the cost and the practical implications of a performance-based only approach.

SORE equipment business is a significant contributor to California's economy. SORE equipment is offered in hundreds of retail locations throughout the state, and relied upon by thousands of professional landscapers on a daily basis. The design-based certification strategy has been key for SORE equipment manufacturers to be able to continue to offer product in California, and in-turn supporting the statewide economy, while working to achieve California's air quality goals with the introduction of new equipment with the latest SORE emissions control technologies.

In 2015, 84 manufacturers, certifying more than 600 >80cc evaporative families relied on design-based certification, due largely to the non-integrated nature of their products and the cost associated with diurnal emissions testing versus relatively low California production volumes for equipment in this category. Contrary to ARB staff's belief that "most certifications (will) be conducted by engine manufacturers" and "engine manufacturers will most likely supply engines with complete fuel systems to equipment manufacturers for most equipment, thereby saving them testing costs" [ARB August 8, 2003 "Staff Report. Initial Statement of Reason for Proposed Rulemaking"], only 20 manufacturers certified any product to the performance-based standard. In other words, more than 75 percent of manufacturers rely exclusively on design-based certification. Additionally, approximately 87 percent of the evaporative families certified rely design-

based certification due to the highly non-integrated nature of the >80cc SORE category. For these reasons, retaining separate design-based certification and compliance options are critical for this >80cc, non-WBM equipment category to continue to be directly offered in the California market. (OPEI, November 17, 2016, letter p. 1-2)

4.

Comment: In 2015, 84 manufacturers, certifying more than 600 >80cc evaporative families relied on design-based certification, due largely to the non-integrated nature of their products and the cost associated with diurnal emissions testing. Contrary to ARB's belief, most of these manufacturers do not have SHED's, and do not concurrently certify units to the performance-based option. As a result, many manufacturers will incur significant new costs with no proven benefit if the proposed certification and compliance strategy changes are approved. However, the proposed amendments fails to recognize the cost associated with the compliance strategy change, and therefore the Agency fails to satisfy it's legal requirements to access the impact of all related costs. (OPEI, November 17, 2016, letter p. 6)

5.

Comment: In 2015, 84 manufacturers certifying more than 600 greater than 80 cc evaporative families relied on design-based certification, due largely to the non-integrated nature of their products, the cost associated with diurnal emissions testing, and low California production volumes for equipment in this category.

Contrary to ARB staff's beliefs that most certification will be conducted by engine manufacturers, and engine manufacturers will most likely supply engines with complete fuel systems to equipment manufacturers, thereby saving equipment manufacturers testing costs, only 20 manufacturers are SHED testing certified any product to the performance-based standard. In other words, more than 75 percent of manufacturers rely exclusively on the design-based certification strategy without SHED testing for a small percentage of the SORE population. (OPEI, November 17, 2016, public hearing transcript p. 61 line 22 – p. 62 line 13)

Agency Response to Comments F.3 – F.5: As OPEI discusses in these comments, design certification was included in the 2003 SORE evaporative emission regulations as an option for evaporative emission control systems on engines with displacement > 80 cc in response to concerns from industry about the cost of diurnal emission testing. Design certification was proposed by OPEI and EMA as an alternative to diurnal emission testing that would ensure equivalent emission reductions at lower cost. To ensure that both design-certified and performance-certified engines were meeting the diurnal emission standards to enable the projected emission reductions

to be realized, the validation studies were designed by ARB, OPEI and EMA and included in the regulations along with design certification.

ARB appreciates OPEI's descriptions of the importance of SORE to the economy of California and professional landscapers and the importance of design certification to its members. ARB also appreciates the efforts of OPEI's members to introduce equipment with the latest emission control technologies such as electronic fuel injection and low permeation materials that will help to ensure compliance with existing emission standards and facilitate future emission reductions from SORE.

OPEI's statement that "more than 600 >80cc evaporative families relied on design-based certification" in 2015 does not match ARB's certification data, which are publicly available on ARB's website. The certification database includes 594 evaporative families for model year 2015, some of which were revised one or more times. Of the 594 evaporative families certified in 2015, 264 are for ≤ 80 cc engines and 330 are for > 80 cc engines. Of the 330 evaporative families for > 80 cc engines, 257 are design-certified, 71 are performance-certified, and 2 fall under the exemption in section 2766(c) for equipment fueled by a vehicle fuel tank.

Although less than half of the figure suggested in OPEI's comments, there were a large number of design-certified evaporative families for > 80 cc engines in 2015, consistent with OPEI's comment that manufacturers prefer this option over performance certification. Because the existing regulations do not require design-certified evaporative families to meet the diurnal emission standards, manufacturers may choose design-certification for more reasons than simply the cost of certification testing. The analysis of the existing regulations as part of the 2003 ISOR assumed that all evaporative families for > 80 cc engines would undergo diurnal emission testing. Design certification was added to the regulations after publication of the 2003 ISOR. It is therefore expected that some portion of all evaporative families for > 80 cc engines would be design-certified.

OPEI refers to the "highly non-integrated nature of the >80cc SORE category" as also contributing to manufacturers' decisions to use design certification rather than performance certification. While many manufacturers are not vertically integrated in the sense of producing the engine, evaporative emission control system and chassis, the decision to use design or performance certification is not necessarily based on this factor. For an equipment manufacturer who purchases engines with complete evaporative emission control systems to install in chassis, certification requirements are likely to be met by the engine or evaporative emission control system manufacturer. For an equipment manufacturer who purchases engines and assembles an evaporative emission control system, certification requirements are more likely to be met by that equipment manufacturer. However, such a manufacturer might choose to use performance certification or design certification, based on a variety of practical and economic considerations.

OPEI's comments discuss the importance of design certification to manufacturers and its frequent use, and state that it is "critical" that design certification remain an option. The proposed amendments do retain design certification as an option, despite the complications it adds to the implementation of the regulations in terms of component certification. Therefore, OPEI's description of the importance of retaining "separate design-based certification and compliance options" when the proposed amendments already retain design certification in response to OPEI and EMA's requests for flexibility suggests the existing (lack of) compliance requirements for design-certified evaporative families are what OPEI would prefer to retain.

ARB cannot ensure that design-certified evaporative families meet the diurnal emission standards under the existing regulations; this prevents the emission reductions projected in 2003 from being realized. Diurnal emission testing estimates real-world evaporative emissions from SORE, whereas component permeation testing for design certification only accounts for a portion of the diurnal emissions. ARB must be able to enforce the diurnal emission standards for all evaporative families for > 80 cc engines in order for the regulations to provide the expected emissions reductions from SORE. The proposed amendments retain design certification as an option while requiring all evaporative families for > 80 cc engines to meet the diurnal emission standards. This gives manufacturers the flexibility to choose their certification method and gives ARB the ability to ensure the diurnal emission standards are met and expected emissions reductions are being achieved.

OPEI's assertion that requiring design-certified evaporative families to meet the diurnal emission standards will require manufacturers who do not currently perform any diurnal emission testing to "incur significant new costs" is inconsistent with both the premise under which OPEI and EMA originally proposed design certification in 2003 and OPEI's comments G.24 and G.25. OPEI simultaneously argues that design certification has been an effective option for ensuring California's overall air quality goals for SORE are met and that design-certified evaporative families meet the diurnal emission standards when proper quality controls are in place, while also contending that manufacturers can only ensure that their engines meet the diurnal emission standards by conducting diurnal emission tests. The arguments contradict each other.

If design certification enables California to meet its overall air quality goals for SORE, it cannot also be true that manufacturers will have to conduct diurnal emission testing of design-certified evaporative families for certification. OPEI's comments, taken together, suggest that design certification will ensure engines meet the diurnal emission standards so long as ARB does not have the ability to enforce those standards. However, OPEI's comments also suggest that if ARB did have the ability to enforce the diurnal emission standards for design certified evaporative families,

design certification would no longer provide manufacturers with the necessary assurance they would need, and they would have to perform diurnal emission tests for certification.

These contradictory arguments made by OPEI leave OPEI with no clear position on the effectiveness of design certification. What is clear is the perceived value of design certification to manufacturers, as evident from the larger number of design-certified evaporative families versus performance-certified families in 2015. ARB has retained design certification to give manufacturers the flexibility requested, but has clarified that all evaporative families for > 80 cc engines must meet the diurnal emission standards regardless of the certification option chosen to ensure expected emissions reductions are achieved.

The proposed amendments do not require any additional diurnal emission testing versus the current regulations. Also, any diurnal emission testing of design-certified evaporative families for certification would be voluntary and duplicative unless a manufacturer decided to change to performance certification. However, because OPEI states that manufacturers who previously relied only on design certification would conduct diurnal emission testing under the proposed amendments, the updated Economic and Fiscal Impact Statement (Form 399) for these amendments includes costs for voluntary diurnal emission testing. ARB believes these costs are not likely to be incurred because manufacturers will continue to use their current certification methods, so the costs presented are an upper bound.

6.

Comment: The proposed amendments look to eliminate the stand-alone design-based certification and compliance option, offering the design-based strategy only as part of the performance-based certification and compliance option. Additionally, the proposed amendments look to allow ARB to make compliance determinations based solely on performance-based certification limits and procedures, and on as few as one test unit. The proposal, to assure a design-based piece of equipment will unequivocally meet performance limits is a major change, with strategy reconsiderations, and significant cost implications.

Of most concern, the proposed amendments punish responsible manufacturers that have demonstrated a long history of SORE emissions compliance, rather than targeting non-compliant manufacturers. (OPEI, November 17, 2016, letter p.2)

Agency Response: This comment is similar to Comments F.3 – F.5. The proposed amendments retain design certification but add the ability for ARB to enforce the diurnal emission standards for all > 80 cc engines. The proposed amendments reduce the number of engines ARB must test initially in a compliance test from five to one, but retain the provision for a manufacturer to have five engines tested at an independent laboratory if

one or more failures occur in ARB's initial testing. Certification of an evaporative family for > 80 cc engines does not require any diurnal emission testing if design certification is used. If performance certification is used (which is required for walk-behind mowers), a manufacturer must test one engine. In this way, the initial compliance determination is based on the same number of tests as certification. Because a manufacturer may have five engines tested at an independent laboratory, the final compliance determination will be determined based on more than just ARB's initial test.

In response to requests from OPEI and EMA, ARB added a provision in section 2765(b) specifying that an evaporative family will be determined to have passed the compliance testing if the average of the results for the five engines tested at an independent laboratory does not exceed the applicable standard.

This comment further illustrates the contradictory nature of OPEI's position on design certification, suggesting again that design certification does not ensure compliance with diurnal emission standards. OPEI's comments serve to undermine the validity of the certification method it claims to want to preserve. Test results from both ARB and manufacturers suggest that improvements are needed to ensure compliance of both performance- and design-certified engines, and ARB staff believe the proposed amendments will provide the needed improvements. OPEI's arguments, however, by suggesting that design certification does not ensure compliance with diurnal emission standards, support the elimination of design certification. In an effort to provide the regulated parties with their desired flexibility, though, design certification has been retained.

OPEI contends that the proposed amendments will punish compliant manufacturers, presumably by giving ARB the ability to enforce the diurnal emission standards. However, compliant manufacturers would actually stand to gain from the proposed amendments because they do comply with the standards. Any evaporative family that already meets the existing diurnal emission standards would be able to meet the standards under the proposed amendments. It is non-compliant manufacturers that may be enjoying a competitive advantage from not meeting the standards that would face potential enforcement action. Compliant manufacturers would benefit from continued availability of their products as non-compliant products were removed from the marketplace or brought into compliance.

G. Comments Regarding the Validation Studies

1.

Comment: Air Resource Board staff and members of industry have spent more than a decade engaged in rule-makings and testing units to better understand the efficacy of design certification. After multiple studies and years of work, it is clear that the current regulation fails to adequately

protect public health and requires revisions. (SCC et al., November 14, 2016, letter p. 1)

2.

Comment: The Board's validation testing indicates that current small engines are overwhelmingly failing to meet the Board's emissions standards. Equipment with model-years between 2008 and 2015 consistently fails to meet the standards [Staff Report at 10-11]. As a consequence, "more than 50 percent of the SORE equipment sold in California fails to meet ARB's diurnal emission standards" [Staff Report at 85]. The standards are, in other words, bypassed more often than they are observed. And the failures are not minimal; in some cases, testing measured emissions more than fourteen times the prescribed limits [Staff Report at ix].

Section 2754.2(f) of the regulations requires a determination, based on the validation studies, as to whether the certification methods are "achieving ARB's overall emission reduction goals"; the only reasonable conclusion is that they are not. While both performance and design tested units demonstrated non-compliant emissions, those test results—and Executive Order holders' failure to improve compliance during the five years between the Board's verification studies—strongly supports the proposal's requirement of direct measurement of emissions from design-certified units. To forego such measurement, on a record of persistent and dramatic non-compliance, even where Order holders are conducting emission tests, would essentially abandon the standards entirely.

The enormity of the failure rate demonstrated in the validation studies demands prompt action. And given the decade or more such equipment is likely to remain in use, the non-conforming equipment currently being sold in California is likely to persist for years going forward, frustrating efforts to reduce—or even meaningfully assess—pollution from small off-road engines. Absent the proposed amendments air districts cannot reasonably rely on the existing standards within their Clean Air Act implementation plans, given those standards' demonstrated failure to secure compliance [See *Nuclear Energy Institute, Inc., v. Environmental Protection Agency*, 373 F.3d 1251, 1272 (D.C. Cir. 2004) ("Only in Superman Comics' Bizarro world, where reality is turned upside down … could the [agency] reasonably conclude that a measure that is at least four times as likely to fail as to success offers [the requisite degree of] confidence." (citation omitted and alterations in original)).]. The improved testing and enforcement provisions in the proposed amendments are a necessary step towards making the Board's current standards effective, both as a practical and a legal matter.

For all of those reasons, the Board should promptly approve the proposed amendments. Thank you for your time and attention. (SCC et al., November 14, 2016, letter p. 3)

Agency Response to Comments G.1 and G.2: The conclusions of Sierra Club California et al. regarding the validation studies are similar to ARB's as described in the Staff Report. The validation studies highlight the high non-compliance rate of both performance- and design-certified engines.

3.

Comment: MECA commends ARB staff for its comprehensive work on the SORE evaporative emission validation studies for model years 2008-2010 and 2013-2015. The low compliance rate for SORE determined from these validation studies (i.e., 55% of design-certified units and 60% of performance-certified units failed to meet the applicable diurnal emission standards in at least one of three diurnal emission tests) clearly showed that changes are needed to increase compliance with the standards. (MECA, November 14, 2016, letter p. 1)

Agency Response: ARB appreciates MECA's support for the work done in the validation studies and wishes to acknowledge that one third of the testing was performed at laboratories other than ARB's.

4.

Comment: The SSI Evaporative Regulation Amendments claim to make changes to the certification and related test methods to improve compliance with the diurnal emission standards. However, there is no supporting information, and in some cases counter information used to justify the proposed changes. One fundamental assumption made by staff is that the compliance rate will improve compliance by requiring directly, or indirectly compliance testing via the SHED performance option. However, as shown in figure II-2 in the ISOR the compliance rate for current product certified by performance is lower than the compliance rate for current product certified by design. EMA members do not disagree that some changes to the requirements for all products regardless of certification approach will improve the compliance rate, but clearly requiring performance (SHED) testing to demonstrate compliance is no better than the design based approach. (EMA, November 17, 2016, letter p. 2)

5.

Comment: Secondly, the change is a certification procedure, and related test methods are claimed to improve compliance with diurnal emission standards. However, there's no supporting information and in some cases counter-information used to justify the proposed changes.

One fundamental assumption made by the staff is that the compliance rate will improve by requiring directly or indirectly testing by the SHED performance option. However, the compliance rates for both options in place today were similar in the most recent validation study.

In addition, changes being proposed to the test methods have not been validated or utilized for any testing that is utilized in any other data reported by the staff. (EMA, November 17, 2016, public hearing transcript p. 70 line 1 – 15)

Agency Response to Comments G.4 and G.5: The proposed amendments are intended in part to improve compliance with the existing diurnal emission standards and contain numerous provisions suggested by EMA and OPEI for this purpose. It is true that having meaningful and enforceable emission standards will enable ARB to ensure the compliance rate improves. Manufacturers of design-certified equipment do not currently have an incentive to ensure their engines meet the diurnal emission standards. The proposed amendments will provide increased incentive for manufacturers of all > 80 cc engines to meet the diurnal emission standards because ARB will be able to effectively enforce the standards. Although both performance certification and design certification should result in compliant engines, the real-world measure of evaporative emissions used for SORE is a diurnal emission test. Therefore it is necessary to ensure that all > 80 cc engines meet the diurnal emission standards, as was the intention and expectation since the regulations were adopted in 2003.

EMA's example of the lower compliance rate for performance-certified engines versus design-certified engines in the validation studies as "counter information used to justify the proposed changes" suggests a misunderstanding of the proposed amendments. As EMA states later in its comment, "changes to the requirements for all products regardless of certification approach will improve the compliance rate." Enabling effective enforcement of the diurnal emission standards is one such change. As EMA contends that "requiring performance (SHED) testing to demonstrate compliance is no better than the design based approach," EMA suggests that design certification is equally effective at ensuring compliance with the diurnal emission standards as performance certification. This is the premise under which design certification was included in the regulations in 2003 and under which it was retained in the proposed amendments. Compliance testing is separate from certification, however. Compliance testing must measure diurnal emissions to be representative of real-world evaporative emissions from SORE. The need for enforceable diurnal emission standards, rather than the relative compliance rates for performance- and design-certified engines in the validation studies, necessitates the changes to the certification and compliance testing requirements.

The changes to TP-901 largely align the requirements with those of U.S. EPA, as requested by EMA. Additional changes to TP-901 incorporate changes requested by EMA and other stakeholders. These changes do not necessitate testing to demonstrate the revised test procedure, as the actual permeation testing is not significantly changed.

Changes to the diurnal emission test in TP-902 were demonstrated in the E10 study, which used the updated certification test fuel. EMA's concerns

regarding TP-902 have been addressed through 15-day changes, including restoring the current carbon canister purging process, and are also addressed in responses to comments L.1 – L.20.

6.

Comment: OPEI is additionally concerned that the underlying data driving the amendments, specifically the Validation Study test results, is highly unreliable, with high standard deviation, due to test procedure inconsistencies and unrepeatable results throughout the study. In addition, while the Validation Study is based largely one specific product category, portable generators, that reflects only a small portion of the overall SORE population and emissions inventory, the results of the Study are used Broadly. ARB's determination ignores the results of the most recent, and statistically more accurate collection of test results to date, the E10 study. There is no reliable data to support ARBs suggestion that "over half of all SORE sold in California do not meet the diurnal emission standards and that changes are needed to increase compliance with those standards" [ARB September 2016 "Staff Report: Initial Statement of Reasons"]. (OPEI, November 17, 2016, letter p. 2-3)

Agency Response: One third of the testing in the validation studies was conducted by manufacturers or their contracted independent laboratories. OPEI does not differentiate between testing conducted by ARB and testing conducted by manufacturers or their contract independent laboratories when claiming that the data are unreliable. However, it seems unlikely that OPEI would consider its members' testing unreliable. The standard deviations of the three results for each engine are not a measure of the precision of TP-902 but rather a reflection of the variability of the emissions from the carbureted engines sold in California. TP-902 includes robust calibration procedures to ensure a high degree of precision in the analytical instrumentation used to measure diurnal emissions. SORE, on the other hand, use carburetors (sometimes referred to pejoratively as "calibrated leak devices") and fuel lines, fuel caps and gaskets that are often susceptible to permeation. These result in variable emissions from the engines.

In light of OPEI's comment, it is informative to compare the average relative standard deviations for all validation study testing performed by ARB between 2013 and 2015 and all validation study testing performed by other laboratories in that same period. The average relative standard deviation for testing performed by ARB from 2013-2015 is 12 percent, and that for testing performed at other laboratories is 29 percent. If gross emitters are excluded, the ARB average relative standard deviation is 9 percent versus 11 percent for other laboratories. ARB does not believe average relative standard deviation is a measure of the quality of the testing performed by a laboratory, but the comparison refutes OPEI's claim of unreliability of the validation studies.

ARB acknowledged concerns about the use of an auxiliary fan in the first phase of the validation studies from 2008-2010, but believes the results from the testing are nonetheless reliable. Section 5.1 of TP-902 (section 4.1 in the amendments) provides for the use of additional blowers to maintain a homogeneous mixture of air within the enclosure (SHED) during testing. The auxiliary fan OPEI refers to is an example of such a blower and was used to maintain a homogeneous mixture of air within the SHED. No auxiliary fan was used in the second phase of the validation studies from 2013-2015. Although an improvement in the compliance rate occurred between the 2008-2010 phase and the 2013-2015 phase of the validation studies, the overall failure rate in 2013-2015 phase was still 50 percent. The compliance rate determined from testing at non-ARB laboratories decreased from 80 percent in the 2008-2010 phase to 50 percent in the 2013-2015 phase of the validation studies.

The validation studies included engines from many different manufacturers, and equipment types were selected by the manufacturers, not ARB. The presence of a large number of generators in the validation studies is a result of their selection by the manufacturers. The majority of the evaporative families of the tested generators also included other equipment types which the manufacturers could have selected for testing. Some of the generators in the validation studies were manufactured by OPEI members. OPEI also participated in the design of the validation studies in 2003. By intention, most of the units in the validation studies were design-certified. OPEI contends that design-certified evaporative families have "relatively low California production volumes" in Comments F.3 and F.5, but also participated in the design of studies that would test five times as many design-certified units as performance-certified units. This by itself is not contradictory, but OPEI points to the small population of generators in the emissions inventory as a flaw in the validation studies. OPEI's comments do not serve to illustrate problems with the validation studies, but do make OPEI's position less clear. The fraction of generators tested in the validation studies does not undermine the validity of the testing or the results. It simply reflects the equipment chosen by manufacturers to represent their evaporative families.

ARB's Executive Officer's assessment of the validation study results, as required in section 2754.2 of the regulations, where the validation studies are outlined, is appropriately based on the validation studies and not on the E10 study results. ARB's E10 study included a subset of the passing units from the validation studies (with the exception of one unit that was chosen to be included in both studies before it had been tested in the validation studies) in addition to performance-certified units and handheld equipment. The E10 study had a different purpose than the validation studies and used E10 fuel. However, the proposed amendments were adopted in the context of both the validation studies and the E10 study. The E10 study is addressed in more detail in responses to Comments H.1 – H.4. OPEI suggests that the E10 study was "more accurate" than the validation studies, but standard deviation, which seems to be OPEI's measure of the

validity of the testing, is a measure of precision, not accuracy. OPEI does not support its claim that the validation study data are not reliable, but the Staff Report and responses to comments support the reliability of the data.

7.

Comment: To adequately satisfy the requirement to determine that SORE certification and compliance strategies are meeting the overall emission reduction goals, reliable data must be analyzed versus the SORE evaporative emissions model. Unfortunately, the validation study data is neither reliable, nor representative of the population or emissions inventory distribution, and alone cannot be used to determine overall emissions impact. As a result, ARB must commission a new Validation Study in order to determine if California's air quality goals are being met, or if any changes to the Regulation Order, Test and Certification Procedures are needed.

OPEI has identified several major concerns with the Validation Study that undermine the ability to make a broad based compliance determination. Easily missed test-to-test variations, such as the application of auxiliary fans during testing and how equipment was handled negatively influenced test results and produced widely variable data with high standard deviations. The sample population was largely unreflective of California's SORE population or evaporative emissions inventory distribution. These issues are further detailed in Annex B. (OPEI, November 17, 2016, letter p. 3-4)

8.

Comment: To adequately satisfy the requirement to determine that both strategies are meeting the overall emission reduction goals, reliable data must be used to adjust the entire, overall SORE evaporative emissions model, based on product type and population and compare to California's overall air quality goal. Unfortunately, the validation study data is neither reliable, nor representative of the population or emissions inventory distribution, and alone cannot be used to determine overall emissions impact. Therefore, based on the information provided in the Staff Report, the Executive Officer cannot reasonably determine that either strategy has been ineffective in helping achieve ARB's overall emission reduction goals. As a result, ARB should commission a new Validation Study in order to determine if California's air quality goals are being met, or if any changes to the Regulation Order, Test and Certification Procedures are needed. (OPEI, November 17, 2016, letter p. 32)

9.

Comment: ARB staff proposed amendments rely largely on the validation study results. However, OPEI has identified several major concerns with the validation study that undermine the ability to make a broad-based compliance determination. Easily missed test-to-test variations such as the application of an auxiliary fan during testing and equipment handling

throughout tests negatively influenced test results and produced widely variable data with high standard deviations.

Additionally the sample population was largely unreflected of California's SORE population or evaporative emissions inventory distribution. (OPEI, November 17, 2016, public hearing transcript p. 63 line 14 – line 25)

Agency Response to Comments G.7 – G.9: The stated goal of the validation studies is related to emissions reductions, not air quality as OPEI writes in its comments. The distinction is important because air quality goals are long-term and relate to attainment of ambient air quality standards for ozone and other pollutants. Attainment of these standards requires emissions reductions from mobile, stationary and area sources. The validation studies are specifically focused on diurnal emission reductions from > 80 cc SORE. Achieving the projected emission reductions requires compliance with the diurnal emission standards.

The reliability of the validation study data is discussed in the response to Comment G.6. ARB declined to commission a new validation study for the reasons supporting the proposed amendments and in light of the need to achieve additional emission reductions from SORE by 2031. OPEI's concerns regarding the use of an auxiliary fan in 2008-2010 are also discussed in the response to Comment G.6. ARB handled the equipment in the validation studies with care and operated it in a manner consistent with its design. This involved moving the equipment from inside a building where it was preconditioned to an outdoor area to run the engines and then moving it into the SHED for testing, either on its own wheels or on a cart. If this is the type of handling that OPEI believes "negatively influenced test results," movement of SORE equipment by consumers would have a similar effect on evaporative emissions; because this type of movement represents real-world use of SORE, it is not prohibited by the test procedure. OPEI's comment suggests that it may be necessary for manufacturers to recall all of the evaporative families included in the validation studies and any other evaporative families that include equipment that might be subject to movement during its lifetime. ARB does not believe that moving SORE equipment undermines the validity of diurnal emission testing. Any failure to meet the evaporative emission standards as a result of moving the equipment would indicate an evaporative emissions-related defect.

OPEI comments that the validation studies are not "representative of the population or emissions inventory distribution." The definition of evaporative family in section 2752(a)(8) of the current regulations reads, in part, ""Evaporative Family" means a class of off-road engines or equipment that are grouped together based on similar fuel system characteristics as they relate to evaporative emissions." As mentioned in the response to Comment G.6, the majority of the evaporative families for the generators tested in the validation study included additional equipment types beyond generators.

It is common for manufacturers to include several equipment types, and numerous models, fuel tank sizes, fuel line lengths, and engine families, often from different manufacturers, in an equipment family. The representation that manufacturers make to ARB to obtain certification is that all engines and equipment included in an evaporative family are similar and that the certification data for the family are representative of the whole family. OPEI's comment would suggest that the validation study results for generators do not represent the other equipment types included in the generators' evaporative families. If test results for one equipment type were not representative of what would be observed for other equipment types, it would not be possible to group more than one equipment type into an evaporative family.

However, OPEI took a different position when ARB staff proposed in the May 12, 2016, draft regulatory text that an evaporative family could include only one engine family. OPEI commented that this would unnecessarily increase the certification workload for manufacturers and ARB because of the large number of evaporative families it would necessitate. Comments G.7 – G.9 are inconsistent with OPEI's earlier comment on the draft amendments. ARB believes the validation study data are reliable and representative of the products sold in California. ARB will continue to allow more than one equipment type and engine family to be included in an evaporative family. OPEI's Annex B comments are addressed below.

10.

Comment: ANNEX B, VALIDATION STUDY CONCRENS & THE E10 STUDY, TEST PROCEDURE VARIATION & TEST DATA RELIABILITY – As agreed to during the 2003 rulemaking, a Validation Study was conducted "to confirm that the performance-based evaporative certification option and design-based evaporative certification option are achieving ARB's overall emission reduction goals" [ARB Chapter 15 "Additional Off-Road Vehicles and Engines Pollution Control Requirements", Article 1 "Evaporative Emissions Requirements for Off-Road Equipment", Section 2754.2 "Validation Study"]. As a result of the Validation Study, ARB staff reported that "fifty five percent of the design-certified units and 60 percent of the performance-certified units failed to meet the applicable diurnal emissions standards in at least one of three diurnal emissions tests". However, ARB staff failed to acknowledge several examples of test-to-test variations that negatively influenced test results undermining the ability to make a broad based determination. (OPEI, November 17, 2016, letter p. 29)

11.

Comment: The Validation Study was included as part of the 2003 rulemaking to confirm that the performance-based evaporative certification and design-based certification option are achieving ARB's overall emission reduction goals. Unfortunately, the Validation Study was plagued with well disguised issues, resulting in widely variable and inconsistent test results,

and was highly unrepresentative of the actual population and inventory distribution. (OPEI, November 17, 2016, letter p. 6)

Agency Response to Comments G.10 and G.11: The reliability of the validation study data is discussed in the response to Comment G.6. OPEI's concerns regarding the variability in the testing are discussed in the responses to Comments G.6 – G.9. The need to have meaningful and enforceable emission standards is a fundamental requirement of achieving emission reductions. The determination that all > 80 cc engines must meet the diurnal emission standards is supported by the validation study results but could have been made in the absence of the validation studies, as well.

12.

Comment: ARB's 2010 testing was the first a series of tests included in the Validation Study. These first tests focused on 2008-2010 production units. In total 30 units were tested, 20 by ARB and 10 by third-party laboratories chosen by the manufacturers of selected products. Of the 20 units tested by ARB, 16 (80%) of the units exceeded the imposed-upon diurnal limits, while only while only 2 (20%) of the third-party tested units exceeded the imposed-upon diurnal limits. Although ARB provides no explanation for the differences in the 2016 Staff Report, OPEI believes ARB test procedure differences and test-to-test variation resulted in higher evaporative emissions, and in-turn a higher failure rate, for units tested by ARB versus units tested by third-party labs.

Throughout the 2010 testing ARB included an auxiliary fan in the SHED, generating a constant air-flow of approximately 6 mph across test equipment. While the need for additional air-flow in automotive testing is common to assure a homogenous sample mixture in large SHED's, the need for, and the impact of additional air-flow for SORE testing was unclear. Unfortunately, the inclusion of the auxiliary fan produced widely variable test results, depending on the position of the fan relative to test units. (OPEI, November 17, 2016, letter p. 29)

Agency Response: OPEI suggests that units tested by ARB in the 2008-2010 phase of the validation studies failed at a higher rate that those tested by other laboratories because of "ARB test procedure differences and test-to-test variation." OPEI's concerns regarding the use of an auxiliary fan in 2008-2010 are discussed in the response to Comment G.6. This comment would suggest that SORE equipment should not be subject to air movement. Along with OPEI's comments regarding ARB's handling of equipment, OPEI seems to suggest that SORE equipment will meet the diurnal standards only if it remains stationary throughout its lifetime in an ambient environment with no air movement.

There are several additional factors that undermine the claims in this comment. First, the units tested by ARB were from different families than those tested by other laboratories, so the same compliance rates would not

necessarily be expected. ARB also tested twice as many units as other laboratories, so there were more opportunities for failure in ARB's testing. OPEI does not suggest that those non-ARB laboratories that observed failing results mishandled the equipment or conducted the testing improperly. OPEI also does not mention that the failure rate at non-ARB laboratories was higher in 2013-2015 than in 2008-2010. Because the instrumentation in diurnal emission tests is regularly calibrated, the variability in the results is a result of the variability in emissions from engines. For all of the reasons above, ARB does not see any merit in OPEI's claims that ARB's handling of equipment or testing influenced the results of the tests.

13.

Comment: 2010 test unit 5(8P3) was reported to have resulted in evaporative emissions of 3.190, 5.290 and 15.070, versus the units 1.25 g/day 24-hour diurnal performance standard. Upon learning the validation study results, and the use of the auxiliary fan to test unit 5(8P3), the manufacturer sent the test unit to a third-party laboratory for additional testing. Working with the laboratory, the manufacturer was able to confirm that fan position highly influenced evaporative emissions results, approximately duplicating the 15.070 g/day test results with the fan blowing on the unit, but also duplicating certification limit values with the unit elevated to allow airflow under the unit. The manufacturer determined when the carburetor vent was exposed to the constant air velocity, a venturi effect drew fuel and fuel vapors from the carburetor, resulting in large test-to-test standard deviation and artificially high evaporative emissions depending on the auxiliary fan position, similar to the validation study results. These results were further confirmed later that year when the same model was selected for a five-piece compliance audit. After discussing the concern and the impact of the fan on test results with ARB El Monte test staff, the compliance audit test was conducted without the auxiliary fan. In this test configuration, ARB determined the family was compliant with the evaporative emissions regulations. Although ARB staff was aware of industry's concern, no mention of the potential impact of the auxiliary fan was made for stakeholder consideration in 2016 Staff Report. Based on high test results and large standard deviations for tests conducted by ARB, OPEI remains concerned that the use of the fan during the 2010 testing artificially and negatively influenced several units. (OPEI, November 17, 2016, letter p. 29-30)

14.

Comment: 2010 test unit 5AP3 was reported to have resulted in evaporative emissions ranging from 3.2 to 15.7 versus the 1.25 grams per day standard. Upon learning the results and the use of the auxiliary fan to circulate air in a SHED, the equipment manufacturer sent the test unit to a third-party lab for investigation. Working with the lab, the manufacturer was able to confirm that the fan position highly influenced the evaporative

emissions results, duplicating ARB's test results with the fan blowing across the unit, but also duplicating certified limit values with the fan blowing underneath the unit when the unit was elevated.

ARB determined -- or it was determined that when the carburetor was exposed to the fan's constant air velocity, a Venturi effect drew fuel and vapors from the carburetor, resulting in large test-to-test standard deviation and artificially high evaporative emissions.

Coincidentally, the same model was selected by ARB for a five-piece compliant test shortly thereafter and was found compliant without the fan.

Unfortunately, no mention of the impact of the axillary fan was made and only the original validation study test results were reported in the 2016 staff report. Based on widely variable test results and large standard deviations for tests conducted by ARB, OPEI remains concerned that the use of the fan throughout ARB's 2010 validation study artificially and negatively influenced results. (OPEI, November 17, 2016, public hearing transcript p. 64 line 1 – p. 65 line 3)

Agency Response to Comments G.13 and G.14: Unit 8P3 was a model year 2008 Weedeater lawn mower with engine and evaporative emission control system both certified by Briggs & Stratton Corporation. Briggs & Stratton Corporation declared an evaporative family emission limit differential of 0.10 g/day, resulting in an effective diurnal emission standard of 1.15 g/day for the CMV1 evaporative family, rather than the regular standard of 1.25 g/day. This family was certified under Executive Order U-U-002-0447 with a certification test result of 0.90 g/day. The results of the testing performed at a third-party laboratory suggest that the design of the unit would lead to much higher emissions in the real world (where lawn mowers and air move) than were observed in the certification test. This, however, is not an indication that the validation studies were not reliable. Any Venturi or other effect that was created by air movement over these lawn mowers in diurnal emission testing would also occur in the real world, resulting in excess emissions. However, ARB is unaware of any actions taken by Briggs & Stratton Corporation to mitigate excess emissions caused by air movement, if there were any, from the 2008 CMV1 evaporative family.

Compliance testing was conducted on the CMV1 evaporative family in model year 2009, as OPEI mentions in its comment, but OPEI's description of the results is not accurate. The diurnal emission standard for this family in model year 2009 was 1.0 g/day. The compliance test results for the five engines ranged from 1.177 to 1.24 g/day. All five engines failed to meet the diurnal emission standards. However, because the family was in its second year of production and the standard for lawn mowers decreased in 2009, the upper 95 percent confidence interval or "U factor" calculated in section 2765(a)(7) for the results did not exceed the threshold for failure. This is an example of a problem with the current compliance testing requirements that

the proposed amendments are intended to solve. Having five out of five engines fail the compliance test but not exceeding the threshold for the family to fail is not an indication of compliance with the emission standards.

The Staff Report presents the validation study results rather than follow-up testing results because the follow-up testing was not part of the validation studies. The Staff Report does not discuss concerns about the use of an auxiliary fan because ARB does not believe its use influenced the results. This FSOR addresses those concerns (see in particular the response to Comment G.6). OPEI's validation study comments focus on the 2008-2010 phase of the validation studies, but this was the early part of the studies. The 2013-2015 phase also showed high non-compliance rates and did not use an auxiliary fan. ARB has acknowledged and addressed OPEI's concerns with the validation studies; the concerns do not indicate the studies were unreliable.

15.

Comment: Additionally in 2010, in at least one case, test equipment was preconditioned at ARB facilities in Sacramento then transported by truck more than 400 miles to test facilities in El Monte. Despite unorthodox test procedures, and the inclusion of the aforementioned auxiliary fan, unit 4(8P2) just marginally exceeded its diurnal limits in all 3 tests. Similar to the case above, this unit was subsequently selected for a five-piece compliance audit in 2010. Again, contrary to the validation study test results, ARB found the unit to be in compliance after all durability and compliance testing was conducted at the El Monte laboratory, with average test results approximately 50% less than the average validation study test result. Although ARB staff was aware of industry's concern, no mention of preconditioning procedure variability was made for stakeholder consideration in the 2016 Staff Report. OPEI remains concerned that test procedures were not precisely followed during the 2010 testing and artificially and negatively influenced several units. (OPEI, November 17, 2016, letter p. 30)

Agency Response: OPEI's comment may imply that transportation of the Toro lawn mower with engine and evaporative emission control system certified by Kawasaki Heavy Industries, Ltd. after preconditioning and before diurnal emission testing affected the test result. For the reasons provided above, SORE must be able to meet the emission standards even after being moved.

Because Kawasaki declared a more stringent evaporative model emission limit of 1.0 g/day, the results of the validation study testing were 35-45 percent higher than the effective diurnal emission standard for this 8KAXS.1791OP evaporative family. The failure was not marginal, but transportation does not excuse failure. ARB believes that the validation study results are reliable, that manufacturers design their products to be

transported and moved throughout their lifetime and so should meet the standards even if moved.

When compliance testing was conducted on the model year 2009 9KAXS.1791OP evaporative family, the test results ranged from 0.922 to 1.047 g/day, and the average was 0.976 g/day or 30 percent lower than the average of the validation study results for this evaporative family. This improvement in the results is an example of a manufacturer reducing emissions within one model year and was a desired outcome. It does not demonstrate that ARB's testing did not align with TP-902.

16.

Comment: The 2015 study was the second validation study conducted by ARB. The study focused on 2013-2015 production units. In total 29 units were tested, 21 by ARB and 8 by third-party laboratories chosen by the manufacturers of selected products. In discussing the 2015 test results, ARB staff advised industry of gas leaks on a small number of "gross emitters" (units exhibiting evaporative emissions more than 1.5 times calculated diurnal-performance emissions limits). However, while in a few cases leaks from these "gross emitters" would have led to excessive evaporative emissions, it was not always evident if leaks were quality issues, or related ARB test procedures. (OPEI, November 17, 2016, letter p. 30)

Agency Response: Eight of the 29 units in the 2013-2015 validation study had emissions more than 1.5 times the diurnal emission standard in at least 1 of the 3 tests. Two of these eight were tested at non-ARB laboratories. When ARB shared the results of the 2013-2015 validation study, including pictures of some units, with OPEI and others, ARB pointed out fuel leaking from fuel tank seams and fuel lines connected to carbon canisters that should only contain fuel vapors. If running the engine and conducting hot soak and diurnal emission tests caused leaks it would not be an indication of improper handling or a problem with the procedure. It would indicate poor design, manufacture, or assembly of the product.

17.

Comment: ARB's final study, the E10 study, highlighted one additional test variability concern. In order to control diurnal and resting emissions, most SORE rely on carbon canisters to capture vapor loss. However, if the carbon canister is exposed to liquid, its ability to function as designed is greatly compromised. Unexpectedly, while handling unit E10-18 ARB staff allowed the carbon canister to be saturated, resulting in test results above the diurnal-performance limits. To understand the impact of saturating the canister, ARB staff dried the canister and retested the unit, taking the necessary precautions so as not to saturate the canister a second time. The result was an (at least) 80% reduction in the evaporative emissions (Note, the maximum E10 study test result was 1.8 g/m^2/day. The Staff report

notes that after baking the canister the unit resulted in evaporative emissions below the 1.0 g/m^2/day standard. The actual reduction is unknown because ARB did not provide the final test result, but it is assumed to be at least an 80% reduction based on these values.). OPEI believes it is highly likely that carbon canisters were inadvertently allowed to be saturated with liquid fuel in the previous Validation Study. At least two 2015 validation study "gross emitters" were observed to have fuel saturating or dripping from carbon canister vent lines, and OPEI believes several more units may have had carbon canisters compromised by inadvertent mis-handling of units throughout the validation study. See Figure 1 below. Unfortunately there is no evidence that ARB understood the impact of saturating the canister until Industry presented its June 2016 proposal which included language about carbon canister installation guidance. At that point only a portion of the E10 test units remained to be tested, all Validation Study testing was completed and there was no opportunity to investigate the issue as it may have applied to the Validation Study. OPEI remains concerned that unit handling artificially and negatively influenced several units throughout the validation study. (OPEI, November 17, 2016, letter p. 30-31)

The comment includes a "Figure 1" which contains photographs of units 13D16 (a model year 2013 generator set with an evaporative emission control system certified by Sunjoy (Fujian) Power Machinery Co., Ltd.) and 13D18 (a model year 2013 generator set with an evaporative emission control system certified by Chongqing Am Pride Power & Machinery Co., Ltd.). The photographs were taken by ARB staff and shared with OPEI and others in a technical working group. In both cases, the photographs show an overhead view of the generator set and liquid fuel intrusion in fuel lines connected to the carbon canister. The figure had the following caption: "Figure 1 – Liquid gasoline observed on or dripping from tank-to-canister purge lines for 2015 Validation Study units 15 (13D16) and 16 (13D18)."

Agency Response: This comment is a mixture of discussion of the validation studies and the separate E10 study. Similar to other comments from OPEI, this comment highlights problems with manufacturers' product designs, manufacture, or assembly (including those from OPEI members) rather than demonstrating any problem with ARB's testing. Unit E10-18 was a model year 2012 Echo Bear Cat chipper/shredder with a Subaru engine and evaporative emission control system certified by Fuji Heavy Industries, Ltd. The carbon canister was integrated into the fuel cap on this engine, a common practice for SORE. Such carbon canister-fuel cap combinations are designed to prevent liquid fuel intrusion into the carbon canister. ARB's observations are discussed on p. 16 of the Staff Report. ARB suspected that liquid fuel may have leaked into the carbon canister as a result of moving the chipper/shredder for testing. OPEI states that ARB "allowed the carbon canister to be saturated" when moving the chipper/shredder on its wheels and that ARB took "the necessary precautions so as not to saturate the canister a second time" when carrying the chipper/shredder during testing.

OPEI further suggests that movement of SORE equipment constitutes "mis-handling" in discussing ARB's photographs of two generators with fuel leaks from fuel lines connected to carbon canisters. The need to install carbon canisters in a way that prevents exposing the carbon to water or liquid fuel has been understood by ARB and manufacturers in various industries for decades. Carbon canisters on SORE must already be installed in this way under the existing regulations because they would not meet the emission standards if the carbon were exposed to water or liquid fuel. This requirement is also part of U.S. EPA's evaporative emission regulations for SORE that were adopted in 2008. ARB added the requirement to the proposed amendments to provide the specificity OPEI requested and to align with U.S. EPA's requirement. ARB handled all equipment properly and in a manner consistent with its design, and the validation studies exposed serious emission-related defects with several of the products tested.

18.

Comment: EVALUATION OF DATA TO DETERMINE IF STRATEGIES ARE ACHIEVING ARB's OVERALL EMISSION REDUCTION GOALS
As outlined in the in the regulation, "the Executive Officer will evaluate the data collected and, based on reasonable criteria, make a determination whether the performance-based option and design-based option are achieving ARB's overall emission reduction goals" and "in making this determination, the Executive Officer will consider, among other things, whether a particular product tested is in full compliance with the underlying standards and whether the product configurations are non-representative" [ARB Chapter 15 "Additional Off-Road Vehicles and Engines Pollution Control Requirements", Article 1 "Evaporative Emissions Requirements for Off-Road Equipment", Section 2754.2 "Validation Study"]. These expectations and requirements are clear in the regulation, and must not be confused with ARB staff claims that the goal of the validation study is "to determine whether design-certified and performance-certified equipment met the (regulation) diurnal emission standard" [ARB September 2016 "Staff Report: Initial Statement of Reasons"]. (OPEI, November 17, 2016, letter p. 31-32)

Agency Response: The diurnal emission standards are the measure of emission reductions used in these regulations and in the validation studies. The validation studies consisted of diurnal emission testing of design- and performance-certified engines. The results were compared to the diurnal emission standards, and it was determined that the non-compliance rate was high for both certification methods. ARB used "reasonable criteria" as described in section 2754.2(f) to determine that changes were needed to both certification methods, as discussed in the Staff Report and this FSOR. Determining compliance with the diurnal emission standards was the goal of the validation studies where diurnal emission testing was the tool used.

19.

Comment: Aside from being deeply troubled by the application of unreliable Validation Study test results to determine if SORE are meeting evaporative emission goals, and if particular certification strategies are effective, OPEI found the validation study data set to highly unrepresentative of the population or inventory distributions. Despite highly unrepeatable Validation Study data, with widely varying standard deviations, ARB staff concluded that "fifty-five percent of the design-certified units and 60 percent of the performance ("diurnal")-certified units failed to meet the applicable diurnal emission standards", and that "these results suggest that over half of all SORE sold in California do not meet the diurnal emission standards" [ARB September 2016 "Staff Report: Initial Statement of Reasons"]. Unfortunately, the large percentage of units tested, including a majority of units that exceeded the imposed-upon diurnal-performance limits throughout the Validation Study represent only a small portion of the SORE population or emissions inventory. As shown in Figure 2, "Lawn and Garden" represents 87 percent of ARB's estimated statewide SORE population, and 80 percent of ARB's estimated statewide SORE evaporative emissions. In contrast, "other" equipment represents just 4 percent of ARB's estimated statewide SORE population, and 13 percent of ARB's estimated statewide SORE evaporative emissions. Despite representing just 4 percent of ARB's population and inventory estimates, "other" units including generators, pressure washers and utility vehicles represented 38 of 59, or 64% of the units tested in the Validation Study. (OPEI, November 17, 2016, letter p. 32-33)

The comment also includes a "Figure 2" which contains reproductions of Figures I-2 and I-3 from the September 2016 Staff Report. The figure had the following caption: "Figure 2 – ARB statewide population and evaporative emission estimates by category."

20.

Comment: Additionally -- our additional test concerns are outlined in OPEI's formal written comments.

Of additional concern, the validation study data set was highly unrepresentative of SORE population in inventory distributions. Despite accounting for less than 2 percent of the 2016 inventory model, generators represented 42 percent of units tested. Other units, which would include generators, estimated to be 4 percent of the 2016 population and 13 percent of the inventory distribution, yet accounted for 64 percent of the units tested. (OPEI, November 17, 2016, public hearing transcript p. 65 line 4 – line 14)

Agency Response to Comments G.19 and G.20: The reliability and standard deviations of the validation study data are discussed in the response to Comment G.6. OPEI's concerns regarding the population of

the units in the validation studies are also discussed in responses to Comments G.6 – G.9. As mentioned in those responses, most of the evaporative families included in the validation studies had multiple equipment types. In fact, the same engine and evaporative emission control system configuration are often used on multiple equipment types within an evaporative family.

21.

Comment: In addition to the unrepresentative test unit selection in the Validation Study, ARB's E10 study found 100 percent compliance of <80cc units tested. OPEI analysis of ARB's "Off-Road 2007" model suggests that this category alone represents approximately half of California's 2016 SORE population. Furthermore, the E10 study found 100 percent compliance of the nine new WBM class units. OPEI analysis of ARB's "Off-Road 2007" model suggests that this category alone represents approximately 32 percent of California's 2016 population. In total, 14 never before tested <80cc and WBM class units, representing at least 81 percent of the "Off-Road 2007" model population demonstrated compliance. Due to these findings, and with consideration of the Validation Study's widely variable, unrepeatable, unrepresentative data set, the ARB staff cannot reasonably determine that "over half of all SORE sold in California do not meet the diurnal emission standards". (OPEI, November 17, 2016, letter p. 33)

22.

Comment: Additionally, ARB's proceeding E10 study, the most statistically reliable study to date, suggested 100 percent compliance with walk-behind mowers and less than 80 cc products, which account for greater than 81 percent of the SORE population.

In light of these new findings, ARB must commission a new validation study in order to determine if California's air quality goals are being met or if any changes are needed to the regulation order, test procedures and certification procedures. (OPEI, November 17, 2016, public hearing transcript p. 65 line 15–24)

Agency Response to Comments G.21 and G.22: OPEI's comments on the E10 study are not relevant to the validation studies. Testing of ≤ 80 cc engines in the E10 study was informational since there are no diurnal emission standards for these engines. ARB did not make a finding of compliance of these engines, but merely stated that the diurnal emissions were below the standards for engines with displacement greater than 80 cc and less than 225 cc. Evaporative families for ≤ 80 cc engines were also not part of the validation studies because they don't have diurnal emission standards. OPEI previously claimed ARB mis-handled the chipper/shredder in the E10 study to suggest that the validation study results are unreliable in Comment G.17, but now claims the E10 study was more reliable.

OPEI seems to come to the conclusion that the E10 study was more reliable because a higher fraction of the equipment tested met the diurnal emission standards. That is not a valid reason or a valid conclusion. ARB's statement in the Staff Report that the validation study "results suggest over half of all SORE sold in California do not meet the diurnal emission standards and that changes are needed to increase compliance with those standards" refers to > 80 cc engines because those are the engines for which there are diurnal emission standards. The E10 study results do indicate a higher compliance rate, but, as discussed in the Staff Report, units that had failed in the validation studies were not selected for the E10 study.

23.

Comment: Before I close I would like to take just a moment to discuss the idea of the strategies being equivalent. The point of the validation study is clear, to confirm that the performance-based and design-based options are achieving ARB's overall air quality goals, not to audit units against the performance-based certification limit and determine if the strategies are equivalent in that nature. This could only be done by analyzing reliable data against the emissions model.

In order to appreciate the difference, I wanted to point out a few details about the emissions model. Number one, the emissions model accounts for liquid leakers. When testing and developing the model, ARB observed gasoline leaks in older units. ARB reported that lawn mowers and fuel leaks are not uncommon. Therefore staff found no compelling reason to exclude leaking units.

Hence, leakage is reflected in the model and leaking units cannot be discounted for the purpose of determining if SORE are meeting the overall emissions goals. This is clear in the case of walk-behind mowers, which have a certification limit of 1.0 but a model limit of 1.6.

Therefore, the model is not directly reflective of the performance-based certification limit.

Additionally, when developing the model, staff found generator test results to have high variability. As a result, staff simply averaged the results across the new -- may I just summarize? (OPEI, November 17, 2016, public hearing transcript p. 65 line 25 – p. 67 line 2)

Agency Response: Parts of this comment are similar to Comments G.7, G.8 and G.18 and are therefore addressed in the responses to those comments. OPEI confuses air quality and emission reduction goals. By suggesting that design certification and performance certification are not equivalent in ensuring diurnal emission reductions OPEI argues against the continued availability of design certification. Overall, OPEI's comments

suggest that design certification was never intended to ensure compliance with the diurnal emission standards and the validation studies were never intended to use compliance with the diurnal emission standards as a measure of achievement of emission reduction goals for SORE. However, design certification was included in the regulations on the basis that it would ensure compliance with the diurnal emission standards and the description of the validation studies in section 2754.2 clearly indicates that diurnal emissions testing is the measure of achievement of emission reduction goals for SORE.

This comment refers to OFFROAD2007, ARB's emissions inventory model for SORE. ARB did observe a lawn mower with a liquid leak in its testing when developing the evaporative emissions inventory model. This was a 1989 Toro lawn mower that was approximately 14 years old when the leak was observed. This mower and another lawn mower were used to estimate the diurnal emissions at the end of life for a lawn mower. OPEI incorrectly states the implications of this lawn mower's fuel leak on the emissions inventory model. The model does not assume that lawn mowers leak at the beginning of their life.

OPEI also cites an incorrect diurnal emission rate for lawn mowers in the model. The diurnal emission rate for lawn mowers in the model at the beginning of life, which is what was measured in the validation studies, is 1.04 g/day for model year 2007-2008 lawn mowers, as compared to a diurnal emission standard of 1.30 g/day. For model year 2009 and later lawn mowers the diurnal emission rate at the beginning of life in the model is 0.80 g/day versus a standard of 1.00 g/day. The model assumes that diurnal emissions deteriorate such that at seven years of age, which is the assumed useful life in OFFROAD2007, model year 2007 and later lawn mowers will have diurnal emissions equal to the applicable standard. For comparison, the SORE regulations require compliance with the evaporative emission standards for five years from purchase. Therefore, the emissions inventory model for SORE does not assume lawn mowers subject to the evaporative emissions regulations have emissions above the diurnal emission standards during their useful life.

OPEI's statement that "the model is not directly reflective of the performance-based certification limit," is erroneous. Aside from containing erroneous information, this comment provides no justification for OPEI's claim that the validation studies are unreliable. OPEI's unfinished statement references emission measurements for generators prior to adoption of the regulations in 2003. Although evaporative emissions on unregulated generators did vary widely, that fact is irrelevant to the validation studies, which measured emissions of SORE that were subject to emission standards.

24.

Comment: Due to the issues outlined above, the Validation Study data cannot be relied on as evidence of systemic issues with SORE compliance. Nor does it support ARB staff's conclusions that (1) "the validation studies indicate that, more often than not, design-certified evaporative families do not comply with the diurnal emission standards", (2) that "the compliance rate of SORE with diurnal emission standards has been low since 2008 and has not improved significantly", (3) "changes to the certification and compliance testing procedures need to be made to ensure all engines with displacement greater than 80 cc comply with the diurnal emission standards and allow ARB to take enforcement action when necessary", or (4) that the "disparity between applicant-submitted certification data and ARB's data" is an indication that SORE sold to consumers do not consistently have the same diurnal emission as units tested for certification [ARB September 2016 "Staff Report: Initial Statement of Reasons"]. For these reasons the Executive Officer cannot reasonably rely on results of the Validation Study to conclude the design-based certification is not working to meet California's overall air quality goals. (OPEI, November 17, 2016, letter p. 4, 33)

This paragraph was included twice in OPEI's written comments.

Agency Response: ARB has responded to OPEI's comments regarding reliability of the validation studies. OPEI provides no basis to refute ARB's conclusions, which are supported in the Staff Report and in responses to Comments G.1 – G.23. OPEI again confuses air quality and emission reduction goals in this comment. The only reasonable conclusion based on the high non-compliance rates for both certification methods in the validation studies is that improvements are needed to ensure the projected emission reductions are achieved.

25.

Comment: In its Staff Report, ARB staff notes "some of the equipment had emissions well below the diurnal emission standards, demonstrating that both performance and design certification can work well if proper quality controls are in place" [ARB September 2016 "Staff Report: Initial Statement of Reasons"]. OPEI also believes this to be true. In fact, in light of recent Validation Study findings, and the E10 study results, OPEI believes most SORE equipment is working as needed to achieve ARB's overall air quality goal, regardless of certification strategy. While OPEI disagrees with ARB's conclusion about the effectiveness of SORE evaporative emissions systems, certification strategies and compliance strategies, we are committed to working with ARB staff moving forward to commission a new Validation Study and to address any outstanding concerns. (OPEI, November 17, 2016, letter p. 6)

Agency Response: As discussed in responses to other comments, ARB declined to commission a new validation study because the data from the

2008-2015 validation studies are reliable and enabled the determination outlined in section 2754.2.

26.

Comment: The compliance rates that we're seeing currently are absolutely unacceptable. So certainly there's a very need for this proposal brought forward by the staff to fix that. And we need in this sector to see that real-world emissions are what has been promised, just the same as we need to see that in the motor vehicle sector. (CCA, November 17, 2016, public hearing transcript p. 86 line 20 – 25)

Agency Response: ARB agrees with Coalition for Clean Air's conclusions. The proposed amendments will enable the projected emission reductions to be achieved.

H. Comments on the E10 Study

1.

Comment: E10 STUDY REVIEW – ARB recently followed its Validation Study with the E10 Study to evaluate the impact of changing certification fuel to E10. The test included 17 >80cc units and 5 <80cc units. While some of the units selected for the E10 test were previously used in, and passed the Validation Study, 14 of the units were previously untested models. Unlike the Validation Study, the units selected were also generally reflective of the population and inventory distribution, with the highest population units for the >80cc category, performance tested WBM's representing 58 percent of the >80cc test sample size. Additionally more reflective of the true population and inventory distribution, riding lawn and garden equipment represented 23 percent of the test sample size while "others", including generators, represented 18 percent of the test sample size. (OPEI, November 17, 2016, letter p. 33-34)

Agency Response: ARB disagrees that the units tested in the validation studies were not reflective of the California SORE population, as discussed throughout responses to Comments G.1 – G.26. ARB believes units and test results in the validation studies and the E10 study were representative of SORE sold in California and the SORE population in California.

2.

Comment: This most recent, and OPEI believes the most consistent and reliable of all ARB tests, indicate a high level of conformity when compared to imposed-upon diurnal certification limits, regardless of certification strategy, and despite a test fuel with higher evaporative emissions characteristics than the fuel used in the Validation Study. While the 2013 Validation Study resulted in 100 percent failure of WBM performance-based units, the 9 previously untested performance-based units all passed the E10

test. In total 13 of 17 (76%) >80cc units tested below the imposed-upon diurnal limits. Of the units exceeding the imposed-upon diurnal limits, two units marginally exceeded the imposed-upon diurnal limits as a result of the increased evaporative characteristics of the E10 certification fuel. In fact, both units tested below the certified-to or imposed-upon diurnal limits in the 2013 Validation Study. The third unit that exceeded its performance-certified limit was unit E10-18, discussed above, in which the carbon canister was inadvertently saturated prior to being placed in the SHED. As discussed, when this unit was retested with a dry canister it resulted in test results lower below its certified diurnal limits. (OPEI, November 17, 2016, letter p. 33-34)

Agency Response: OPEI does not demonstrate that the E10 study is more consistent or reliable than the validation studies. The E10 study did indicate that engines with well-designed and constructed evaporative emission control systems will meet the existing diurnal emission standards with E10 fuel, as discussed in the Staff Report. There were 10 performance-certified units in the E10 study that were not part of the validation study, and 9 of these met the diurnal emission standards. The failing performance-certified unit was E10-18, the chipper/shredder with a defect in the carbon canister-fuel cap combination, as discussed in the Staff Report and the response to Comment G.17. Improvements as a result of the proposed amendments are expected to enable the two failing generators from the E10 study to meet the diurnal emission standards.

3.

Comment: Additionally, as noted above, 100 percent of <80cc units tested in the E10 study tested below the imposed-upon diurnal limits. In total, the E10 test resulted in 18 of 22 (81%) units, including 14 new units, testing below the certified-to or imposed-upon diurnal limits, without accounting for the impact of the higher evaporative emitting test fuel or test procedure concerns. OPEI believes that significant procedural improvements, and an increased knowledge and understanding of SORE products and their evaporative systems gained through the Validation Study significantly contributed to the E10 study being the most successful and reliable conducted by ARB yet. Comparison of the standard deviation for units tested in both the Validation Study and E10 study strongly support this conclusion. In six of the seven units tested in both the Validation Study and E10 study the standard deviation improved. In several cases the standard deviation showed more than 80 percent improvement from the final Validation Study to the E10 study. See Table 1. (OPEI, November 17, 2016, letter p. 34-35)

The comment also includes a “Table 1” which lists standard deviations for the diurnal emission test results of eight units included in both the validation studies and the E10 study. A comparison is made for each unit of the standard deviation of the results in the validation studies to the standard

deviation of the results in the E10 study in a column labeled “Improvement.” This seems to be calculated as

$$\frac{s_{VS} - s_{E10}}{s_{VS}}$$

Where:
s_{VS} is the standard deviation of the three diurnal emission test results in the validation studies for a unit; and
s_{E10} is the standard deviation of the three diurnal emission test results in the E10 study for a unit.

This quantity ranges from “INCREASED 4x” for one unit that would have a negative value for “Improvement” to 88%.

Agency Response: The testing of ≤ 80 cc units was informational as discussed in the Staff Report and the response to Comment G.21. OPEI offers no basis for its claim that “procedural improvements, and an increased knowledge and understanding of SORE products and their evaporative systems” occurred. ARB followed TP-902 throughout the validation studies and the E10 study.

OPEI’s comparison of standard deviations for units tested in the validation studies and the E10 study does not demonstrate any difference in the reliability of two studies. The same robust calibration procedures were followed for both studies, ensuring a far higher level of precision in the measurements than carbureted engines could be expected to yield in terms of diurnal emissions. OPEI’s comment does not consider that the fuel was different in the two studies. This likely contributed to the differences observed in the emissions and standard deviations. Also the engines were older by the time they were tested in the E10 study and had undergone additional preconditioning with E10 fuel. This comparison does not indicate any “improvement” in the testing.

4.

Comment: Based on the E10 study, the most reliable ARB data to date, with significantly reduced standard deviation ranges, with reasonable evidence as to why units exceeded the certified-to or imposed-upon diurnal limits, and a test sample more reflective of California’s SORE population an inventory distribution, OPEI concludes that a high percentage SORE are compliant with their respective certification strategies and that both strategies are effectively working to assure air quality beyond ARB’s goals. (OPEI, November 17, 2016, letter p. 35)

Agency Response: OPEI’s claims regarding relative reliability of the E10 study and validation studies are addressed in the response to Comment H.2. It is true that a significant fraction of > 80 cc SORE meet the diurnal emission standards. A larger fraction of the units in the E10 study met the

diurnal emission standards than in the validation studies, as discussed in the responses to Comments G.6, G.21 and G.22. This does not change the reality that ARB must be able to enforce the diurnal emission standards for all > 80 cc SORE effectively.

I. Comments on Compliance Testing

1.

Comment: The SSI Evaporative Regulation Amendments make changes to the compliance determination process required by the agency to significantly reduce the burden on the agency, but result in significant potential for manufacturers to be deprived of due process associated with that determination. As described in the ISOR CARB Staff expects a significant increase in compliance testing by the agency, with resulting penalties, recall obligations, and future certification testing burden to be borne by the engine/equipment manufacturer. There is no doubt that reducing the agency's testing burden from 5 units to 1 unit will reduce the agency's costs associated with evaluation of products deemed compliant with the SSI evaporative emission regulations. However, such an absolute single failure compliance determination is both precedent setting and blatantly unfair. By comparison the current evaporative compliance requirement is based on a statistical analysis of multiple units tested, similarly for SSI exhaust emission compliance determinations a statistically significant failure from testing multiple units (up to 30) is required prior to making a compliance determination on an average (not individual unit) basis. The process associated with the leap from CARB testing one unit and declaring a failure and the determination those fines, recall, and/or significant increases in certification testing burden for ail EO Holder must be defined by the regulation. At a minimum, the information that the Executive Officer must consider before revoking an Executive Order is required. The penalty is also unbalanced as products that are certified under the performance provisions have no increased compliance burden versus nonintegrated manufacturers that utilize the design based approach to compliance. (EMA, November 17, 2016, letter p. 3)

2.

Comment: Third, the compliance determination changes proposed significantly reduce the burden on the agency but result in significant potential for manufacturers to be deprived of due process. CARB staff indicates the Initial Statement of Reasons: A significant increase in penalties, recall obligations, and future certification testing burden. But does not address these costs in the regulatory analysis.

The process associated with CARB testing one unit and declaring an Executive Order revoked, resulting in fines, recall, and significant increases in certification testing, is both unfair and unprecedented.

At a minimum, the information the Executive Officer must consider associated with suspension or revocation of an Executive Order off -- Executive Order that provides due process is required. (EMA, November 17, 2016, public hearing transcript p. 70 line 16 – p. 71 line 6)

Agency Response to Comments I.1 and I.2: The changes to the compliance testing requirements in the proposed amendments align compliance testing and certification testing requirements for the initial determination. Certification of > 80 cc engines will continue to require either use of certified components or one diurnal emission test. Under the proposed amendments, ARB will conduct one diurnal emission test for an initial compliance determination. The existing regulations and the proposed amendments provide in section 2765(b) for an Executive Order holder to provide information, including independent test results for five engines that document compliance of the evaporative family in the case of a failure in ARB's initial determination. Section 2765(c) provides that "the Executive Officer shall not revoke or suspend the Executive Order of Certification, without considering any information provided by the Holder of such certification pursuant to (b) above." As such, the proposed amendments do not "result in significant potential for manufacturers to be deprived of due process associated with that determination" as EMA comments. Similar provisions exist in the current regulations and proposed amendments for components, ensuring a thorough process is followed before any final compliance determination is made.

ARB conducts regular compliance testing of SORE under the existing regulations, and penalties, recalls and certification testing may be required when failures occur. The proposed amendments do not change this. The Economic and Fiscal Impact Statement (Form 399) for these amendments does not project costs associated with failures as these are not required or expected costs of the proposed amendments. EMA mischaracterizes ARB's discussion of compliance testing in the Staff Report. ARB does not express any expectation of failures under the proposed amendments. In fact, the proposed amendments are designed to prevent failures and result in compliance of all SORE with the applicable emission standards. The 95 percent confidence interval calculation in the existing regulations was eliminated as discussed on p. 13 of the Staff Report because it can result in five out of five units exceeding the emission standards without an evaporative family or component failing the compliance test. ARB does not believe EMA's comment about the SORE exhaust regulations is directed at the proposed amendments or the process by which they were adopted. Exhaust emission testing is different from evaporative emission testing, and is not the subject of the proposed amendments. The proposed amendments are intended to align certification and compliance testing requirements for evaporative emissions. Exhaust emissions compliance testing requirements may be the subject of future rulemaking.

To address EMA's concerns, the 15-day changes provide additional clarification in section 2765(b) regarding independent testing and the

Executive Officer's determination. As EMA and OPEI requested, a provision was added that an evaporative family will overcome the initial determination of failure if the average of the five independent test results does not exceed the diurnal emission standard. EMA's comment regarding the "penalty" may refer to section 2753(g) of the proposed amendments, renumbered to 2753(f) in the 15-day changes, that requires diurnal emission testing of all > 80 cc evaporative families for an Executive Order holder whose Executive Order has been suspended or revoked. This provision applies equally to all Executive Order holders, regardless of certification method. There is no difference in requirements under this provision for manufacturers who have previously used performance certification versus those who have only used design certification.

3.

Comment: CARB Document – §2765(a)&(b) New Equipment Compliance Testing

OPEI/EMA Proposed Language Changes – **CONSIDER ALTERNATIVE OPTIONS**

Comment / Reason – Compliance component testing is commonly accepted for other categories, by ARB and other agencies. And with the additional provision that ARB my opt out of durability and preconditioning, testing components for the >80cc category to TP-901 will be no more burdensome than testing complete units to TP-902.

Additionally, TP-901 currently requires multiple (5) units are tested for certification, yet ARB proposes to make a compliance determination based off one test and one unit. ARB also proposes to make a determination on an entire family based on the results of one model. This is inconsistent with the exhaust standards, and is unfair and unprecedented.

Finally, the proposal to determine compliance for all (>80cc) units, based solely on the diurnal emission test results is a significant change in the current regulation, with significant cost impact to manufacturers, and with no substantive justification or validation in the ISoR. The ISoR fails to consider the cost impact related to the proposed change in certification and compliance strategy.

See additional comments to 2753(b) above RE the need for a stand-alone design based strategy and industry's suggested potential improvements to both diurnal and design based strategies (since incorporated into the September 2016 RO proposal.) (OPEI, November 17, 2016, letter p. 20-21)

Agency Response: The proposed amendments continue to include compliance testing of components that exists in the current regulations. To address OPEI's comment regarding the number of components tested in ARB's initial compliance determination, the 15-day changes restore the

requirement to test five components in a compliance test (section 2765(a)(1) and 2765(a)(2)). ARB does not believe OPEI's comment about the SORE exhaust regulations is directed at the proposed amendments or the process by which they were adopted. Exhaust emission testing is different from evaporative emission testing, and is not the subject of the proposed amendments. The proposed amendments are intended to align certification and compliance testing requirements for evaporative emissions. Exhaust emissions compliance testing requirements may be the subject of future rulemaking.

Although certification of an evaporative family is based on component testing or one diurnal emission test, the existing regulations and the proposed amendments provide for additional independent testing of five engines and submission of additional information beyond ARB's initial test. See also the responses to Comments I.1 and I.2.

Ensuring compliance of all > 80 cc SORE with the diurnal emission standards has been the goal of the regulations and both design certification and performance certification since they were proposed and adopted in 2003. The proposed amendments simply give ARB the ability to enforce the diurnal emission standards for all > 80 cc SORE. The Staff Report and responses to comments discuss the need for enforceable emission standards, and the validation studies highlight the need for changes to improve compliance. ARB does not believe that additional diurnal emission testing will be required under the proposed amendments. However, in response to OPEI's comments, additional costs for diurnal emission testing of previously design-certified evaporative families have been included in the updated economic impact statement, as discussed further in agency responses to comments Q.1 – Q.14 and in the Economic and Fiscal Impact Statement (Form 399) for these amendments.

OPEI's comment on section 2753(b) is addressed in response to Comment N.1.

4.

Comment: §2765(a)(8): Utilizing a single unit test result to determine an evaporative family has failed to comply is unprecedented in emission regulations and is not support by CARB regulatory history in any other circumstance. For example current Small SI evaporative compliance is based on a statistical calculation of several units with inclusion of a mean value and similarly Small SI engine exhaust emission compliance test procedures as described in Title 13 CCR §2407(c) includes a statistical calculation method known as cum-sum to determine compliance. As such an individual engine tested and found out of compliance cannot be introduced into commerce but the compliance of the family is not determined until sufficient numbers of test results statistically determine the family to be out of compliance.

a. Recommend that CARB revise the language to read: "An evaporative family engine or equipment is deemed to have passed the compliance testing if....If any engine or equipment unit has diurnal emission more than five percent above the applicable....the engine or equipment will be deemed to have failed compliance testing. ...If the diurnal emission from an engine or equipment unit tested.... The evaporative family engine or equipment will be deemed to have failed compliance testing.
b. Changes to this section should also identify the steps that the Executive Officer must take prior to making a determination of non-compliance for the applicable evaporative family. For example:

i. If upon determination that a unit tested by CARB is not compliant the Executive Officer must follow the process identified in §2765(c), including but not limited to the manufacturer providing the Executive Officer test results that demonstrate on average the family is in compliance with the applicable regulations.

ii. If upon evaluation by the engine/equipment manufacturer it is determined that the failure was the result of a component certified by CARB that is not compliant with the related component EO, CARB shall hold the engine/equipment manufacturer harmless and consider investigation of the Holder of the component EO. (EMA, November 17, 2016, letter p. 7-8)

Agency Response: The first paragraph of this comment is similar to parts of Comments I.1 – I.3 and has been addressed in responses to those comments. ARB does not believe part “a.” of this comment is directed at the content of the proposed amendments or the process by which they were adopted, but has nevertheless been addressed by changes made to section 2765(b) in 15-day changes as discussed in the response to Comments I.1 and I.2. EMA expressed in meetings that its concern with this language related to results for an engine or equipment unit being applied to its evaporative family. However, results for individual units have to be applied to their evaporative families in compliance testing and in certification testing. Otherwise, every engine would have to be tested. EMA also expressed concern that an initial determination of non-compliance for an evaporative family according to section 2765(a)(8) would not be overcome by results from testing under section 2765(b). The revisions to section 2765(b) in the 15-day changes provide the clarification requested in parts “a.” and “b.i.” of this comment.

No change was made in response to part “b.ii.” of this comment. Executive Order holders for evaporative families are responsible for compliance of the entire evaporative emission control system under the existing regulations and the proposed amendments. Nothing in these regulations prevents evaporative family Executive Order holders from including provisions in their agreements with component manufacturers that hold a component manufacturer responsible for failure of an evaporative family caused by a defect in the component. Any such agreement or provision would not involve ARB. However, if a component were determined to be the cause of a failure in an evaporative family compliance test, recall of that component

might occur and ARB might follow up with compliance testing of the component. EMA's proposal would reduce ARB's ability to enforce the diurnal emission standards, create an additional testing burden on ARB, and cause delays in correction of emission-related defects.

5.

Comment: §2765(b): "....The holder of the Executive Order of Certification shall have 30 calendar days .... equipment units selected by the Executive Officer that demonstrate compliance..." imposes an unnecessary constraint of the EO Holder to provide information and the Executive Officer to identify the units to be tested.

a. Recommend that CARB remove the new language "units selected by the Executive Officer". (EMA, November 17, 2016, letter p. 8)

Agency Response: No change was made in response to this comment. As explained on p. 43 of the Staff Report, selection by the Executive Officer of the units for independent testing will ensure they are randomly selected and representative of the units introduced into California commerce. The time allotment of 30 days for an Executive Order holder to notify the Executive Officer of their intent to provide additional information or independent test results is in the existing regulations. ARB does not believe the portion of the comment indicating this imposes an unnecessary constraint is directed at the substance of the proposed amendments or the process by which they were adopted. To clarify, though, an Executive Order holder only has to provide a notification of their intentions within the 30-day time allotment. Units for independent testing do not have to be selected within those 30 days and the additional information does not have to be complete within those 30 days. Nevertheless, it is in the interest of an Executive Order holder to provide the additional information and notification of their intentions in a timely manner so units can be selected for testing, if necessary, and the testing can commence.

6.

Comment: CARB Document – §2765(c)(4) New Equipment Compliance Testing

CARB Language (proposed) – The Executive Officer may revoke an Executive Order of Certification for an evaporative family, fuel line, carbon canister, or fuel tank after the Executive Order of Certification has been suspended pursuant to subsection (1), ~~or~~ (2), or (3)of this section if the proposed remedy for the nonconformity, as reported by the Holder to the Executive Officer, is one requiring a design change or changes to the evaporative emission control system, fuel line, carbon canister, or fuel tank as described in the application for certification of the affected evaporative family, fuel line, carbon canister, or fuel tank ~~or subgroup~~.

Comment / Reason – Once the Executive Order for a fuel line, carbon canister, or fuel tank have been revoked CARB must notify all engine or equipment manufacturers that have utilized the revoked EO as part of their demonstration of compliance per §2753(b). The notification of the EO being revoked must include any constraints associated with on-going production of engines or equipment that utilize the previously certified component. The constraints placed on on-going production must include lead time associated with identification of a certified alternative component, submission of running changes to certification documents, and time to obtain newly required components. In addition, any engines or equipment produced and either sold, or in the distribution system prior to the notification of the component EO being revoked are assumed to be compliant unless an “Ordered Recall” is implemented per §2763. (OPEI, November 17, 2016, letter p. 21)

7.

Comment: §2765(c)(7): Once the Executive Order for a fuel line, carbon canister, or fuel tank have been revoked CARB must notify all engine or equipment manufacturers that have utilized the revoked EO as· part of their demonstration of compliance per §2753(b). The notification of the component EO being revoked must include any constraints associated with on-going production, distribution, or sale of engines or equipment that utilize the previously certified component. The constraints placed on on-going production, distribution, or sale must include lead time associated with identification of a certified alternative component, submission of running changes to certification documents, and time to obtain newly required components. Any engines or equipment produced and either sold, or in the distribution system prior to the notification of the component EO being revoked are assumed to be compliant unless an "Ordered Recall" is implemented per §2763 in which case the recall shall be the responsibility of the component EO Holder. (EMA, November 17, 2016, letter p. 8)

Agency Response to Comments I.6 and I.7: If an Executive Order for a component were revoked, it would be the responsibility of the holder of the revoked Executive Order to notify Executive Order holders who use the component in their evaporative emission control systems of the revocation. The component would no longer be approved for use on design-certified evaporative families. However, Executive Order holders could apply for a variance under section 2768 if they were unable to meet the requirements in sections 2754 through 2757. ARB would also issue a notification of revocation of the Executive Order, if necessary. It would be illegal to sell in California any design-certified engine using a component whose certification was revoked upon the effective date of the revocation of certification. Any obligations to recall the subject component or engines using the subject component would be determined on a case-by-case basis, and could be the responsibility of both component and evaporative emission control system Executive Order holders. Although components may be certified by a manufacturer other than the evaporative emission control system Executive

Order holder, the latter certifies that the whole evaporative emission control system will meet the applicable requirements of the regulations.

These comments state opinions regarding the practical process OPEI and EMA would expect after revocation of a component Executive Order, but do not request any changes. No changes were made in response to these comments, but a cross reference to section 2771 was added to section 2765(c)(5), clarifying that a suspension must be appealed for an Executive Order to be reinstated.

J. Comments on Bonds

1.

Comment: Proposed § 2774(b) states that small engine manufactures with assets less than $ 3 million (if the manufacturer holds an Executive Order of Certification in each of the preceding ten years without failing a compliance test) and manufacturers with assets of less than $10 million (if the manufacturer does not meet the previous standard) must furnish a surety bond to secure the manufacturer's compliance and enforcement obligations. The maximum amount of the bond is the applicable threshold described above ($3 million or $10 million). Although we do not opine regarding the appropriate bond amounts, we advise that bond amounts at such levels ($3 million or $10 million) could affect availability negatively.

Unlike other forms of insurance, in the event the surety must pay a loss, it has the right to seek indemnity from the principal (the manufacturer, in this case). Therefore, part of the surety's underwriting involves a financial assessment of the principal. The surety will require a certain threshold of financial strength relative to the bond amount- the higher the bond amount, the higher the threshold, and the possibility of reduced availability. A manufacturer with limited net worth and working capital might find it difficult to obtain a $3 million bond. (SFAA, October 20, 2016, letter p. 1)

Agency Response: ARB appreciates the Surety & Fidelity Association of America's submission of comments regarding the proposed bond requirements. ARB received only one additional comment regarding the bond requirements in the 45-day comment period. OPEI included the question, "Should ARB adopt a bonding worksheet, similar to EPA?" in its Comment N.25. ARB will create a bonding worksheet that requests information required in section 2774. This worksheet will only collect information required by the regulations, so it will be exempt from rulemaking requirements under the APA. Most, if not all, manufacturers who will be required to post bonds under the proposed amendments, currently have to post bonds under similar U.S. EPA requirements. Since no manufacturers expressed an expectation that they would have difficulty securing bonds under the proposed amendments, ARB believes the proposed bond requirements are deemed to be reasonable by the regulated community and can be met without undue financial expense.

K. Comments on Certification Test Fuel

1.

Comment: MECA also supports staff's proposal to require that the fuel used for SORE testing contain 10% ethanol (E10). Fuel at gasoline stations has contained 10% ethanol since January 2010. Therefore, SORE currently in use in California operate using E10 fuel. Requiring E10 certification test fuel will help to ensure SORE introduced into California meet current emission standards with commercially available gasoline. (MECA, November 14, 2016, letter p. 2)

Agency Response: ARB appreciates MECA's support for the proposal to update the certification test fuel.

2.

Comment: Conceptually EMA member companies strongly support the change in certification test fuel beginning in the 2020 model year as proposed. The timing for this change aligns with the corresponding change in exhaust emission certification test fuel for California products, and also provides the potential to use the same certification test fuel for CARB and EPA testing requirements.

However, there is significant standard stringency impact associated with the test fuel change. In the Initial Statement of Reasons the CARB Staff reports test results suggesting that passing units will remain passing units. However, a review of the CARB test data shows an average increase of over 18% with a range from a negative 10.5% to a positive 47.5% excluding one unit that was apparently repaired between the two tests that showed a 69% improvement. In addition there are significant concerns with the test-to-test repeatability. Again analysis of CARB 's test data for three tests of a single unit shows significant increases in failure, or statistical potential for failure without consideration of any engine/equipment to engine/equipment variability. To further skew the data set utilized by CARB Staff, a significant portion of the units tested using the E10 test fuel were selected based on their having passed when tested using the current certification test fuel. CARB Staff claims on one-hand that significant changes are required to improve compliance, and on the other-hand significant increases in emission rates associated with the change in test fuel are not problematic. EMA members recommend the applicable permeation and diurnal emission limits be increased 20% to adjust the standard stringency for the test fuel change. (EMA, November 17, 2016, letter p. 2)

3.

Comment: The three major categories of change are:
The certification test fuel change;

The certification process and test methods associated with demonstrating compliance; and
The changes to the compliance determination.
First, the change to the E10 certification test fuel results in a significant standard stringency impact. EMA members recommend the applicable permeation and diurnal emission limits be increased 20 percent to adjust the standard stringency for test fuel changes based on CARB's test data that demonstrates up to a 50 percent increase. (EMA, November 17, 2016, public hearing transcript p. 69 line 14 – 25)

Agency Response to Comments K.2 and K.3: The proposed update to the certification test fuel is supported in the Staff Report, in part based on the reasons stated in the first paragraph of Comment K.2. The emission standards are not made more stringent by updating the certification test fuel. The existing emission standards remain under the proposed amendments. ARB does not relax emission standards when updating certification test fuel. When the certification test fuel for SORE exhaust emissions was updated to E10 fuel in amendments adopted in 2011, the emission standards remained the same. The same is true for an update of certification test fuel for portable fuel containers to E10 fuel adopted in 2016. When the certification test fuel for passenger cars, light-duty trucks and medium-duty vehicles was updated in amendments adopted in 2012, tightened emission standards were also adopted.

The E10 study results indicate that engines with well-designed and constructed evaporative emission control systems will meet the existing diurnal emission standards with E10 fuel. This is also discussed in the response to Comment H.2. While higher emissions were generally observed with E10 fuel for units tested in both the validation studies and the E10 study, the majority of units still met the existing diurnal emission standards with E10 fuel, as detailed in the Staff Report. Two of the four failing units had defects discussed in the Staff Report, and the other two were design-certified generators with metal fuel tanks. The certification of metal fuel tanks in model year 2017 may have reduced emissions sufficiently to ensure these generators would meet the existing diurnal emission standards with E10 fuel. In addition, other provisions in the proposed amendments are expected to ensure greater compliance with the existing diurnal emission standards.

EMA and OPEI requested that ARB relax the proposed fuel line permeation requirements, citing cost concerns for using low permeation fuel lines for connections to carbon canisters, as discussed in Comments M.7 and N.10. EMA and OPEI also requested that ARB not require fuel tanks to be sealed with fuel caps for permeation testing, again citing cost concerns associated with ensuring that fuel tanks would meet the existing emission standards when sealed with fuel caps. EMA does not suggest that any evaporative families would be unable to meet the existing diurnal emission standards with E10 fuel under the proposed amendments, suggesting only that the standards will become more stringent. For these reasons and those

discussed in the Staff Report and this FSOR, ARB does not believe the update of the certification test fuel will cause any evaporative family that otherwise would have been in compliance to be out of compliance with the existing diurnal emission standards.

L. Comments on the Test Procedures

1.

Comment: CARB Document – §2758 Test Procedures

CARB Language (proposed) – (b) Testing to determine compliance with section 2755 of this Article shall be performed using TP-901, ~~adopted July 26, 2004,~~ which is incorporated by reference herein.

OPEI/EMA Proposed Language Changes – (b) Testing to determine compliance with section 2755 of this Article shall be performed using TP-901, ~~adopted July 26, 2004,~~ which is incorporated by reference herein and **SAE J30, J1527 or SAE J2996 as applicable.**

Comment / Reason – Current language missing how to test fuel lines. (OPEI, November 17, 2016, letter p. 15)

Agency Response: Section 2758 was modified in 15-day changes to specify fuel line test procedures.

2.

Comment: Changes made to the related test methods for either fuel tank permeation (TP-901) or SHED diurnal testing (TP-902) were not demonstrated by CARB in the rulemaking process and are expected to increase test to test variability, in addition to engine/equipment to engine/equipment variability. In fact, none of the testing completed by CARB Staff in support of the rulemaking was conducted utilizing the test procedures with revisions as proposed. As such many of these changes result in increased standard stringency, increased certification burden, increased test-to-test variability, and/or increased unit to unit test result variability. For example: (i) TP-901 change to delete language associated with secondary operations results in significant new permeation test requirements; (ii) the apparent inclusion of the fuel tank cap in TP-901; (iii) the elimination of the canister purge prior to diurnal testing in TP-902 at a minimum would increase the variability in the test results given the canister initial test state will be a variable and contradicts currently published CARB position regarding canister requirements (SORE Evaporative Certification FAQ's item 1-38, revised 11-9-2015); and (iv) the change from ROG to TOG compounds being regulated.

As such the proposed changes to the certification requirements are clearly arbitrary. (EMA, November 17, 2016, letter p. 2-3)

Agency Response: EMA's comment regarding demonstration of the proposed amendments to TP-901 and TP-902 are discussed in the response to Comments G.4 and G.5. ARB's testing is consistent with the proposed amendments. EMA's comments on increased stringency, burden or variability have been addressed in 15-day changes. In response to part "i" of the comment, ARB restored the sentence, "Tanks that have a secondary operation for drilling holes for insertion of fuel line and grommet system may have these eliminated for purposes of durability and permeation testing." In response to part "ii," ARB made testing with fuel caps optional. In response to part "iii," ARB notes that EMA's reference to a "frequently asked questions" document is not directed at the substance of the proposed amendments or the process by which they were adopted. However, ARB restored the existing carbon canister procedure in TP-902. In response to part "iv," ARB restored the use of "ROG" (reactive organic gases) where it was used previously.

3.

Comment: CARB Document – TP-901 §2 Principal & Summary of Test Procedure

CARB Language (proposed) – This test procedure uses the corrected daily mass change or total organic gas (TOG) emissions measured by a flame ionization detector (FID) of five identical fuel tanks to calculate the permeation rate of each fuel tank. Prior to permeation testing of the fuel tanks, durability testing isand preconditioning are performed. Durability testing exposes the fuel tanks to pressure and vacuum extremes, ultraviolet radiation, fuel sloshing, and fuel cap installation cycles. After durability testing, the fuel tanks are filled with fuel and allowed to precondition to maximize the permeation emissions.

OPEI/EMA Proposed Language Changes – This test procedure uses the corrected **cumulative** mass change or total organic gas (TOG) emissions measured by a flame ionization detector (FID) of **three** identical fuel tanks **and/or fuel caps** to calculate the permeation rate of each fuel tank **and/or fuel cap**. Prior to permeation testing of the fuel tanks, durability testing, **where applicable**, and preconditioning are performed. Durability testing, **where applicable**, exposes the fuel tanks to pressure and vacuum extremes, ultraviolet radiation, fuel sloshing, and fuel cap installation cycles. After durability testing, the fuel tanks are filled with fuel and allowed to precondition to **stabilize** the permeation emissions.

…
You may show that your fuel tank and fuel cap meet emission standards by certifying them separately or by combining the separate measurements into a single emission rate based on the relative surface areas of the fuel tank and fuel cap. If you measure a fuel tank's permeation emissions with a nonpermeable covering in place of the

fuel cap, you must separately measure permeation emissions from a fuel cap. Measure the fuel cap's permeation emissions as described in section 11 of this test procedure.

Comment / Reason – The current provision provides no option for a fuel cap and fuel tank to be certified separately. Fuel caps and tanks may be manufactured by different suppliers, and may result in a variety of combinations for equipment manufacturers. Tank and cap suppliers must have a path to individually certify tanks and caps to retain the current model and limit the amount of data and certifications required. (OPEI, November 17, 2016, letter p. 21-22)

Agency Response: ARB declined to make the changes under "OPEI/EMA Proposed Language Changes." OPEI requested in Comment I.3 that ARB test five components (including fuel tanks) in a compliance test, as is currently required for certification in TP-901. ARB made this requested change; five components will be required for certification and compliance testing. The requested change to require three fuel tanks to be tested in TP-901 is inconsistent with Comment I.3, and no basis is given for the decrease in sample number.

ARB declined to create separate provisions for fuel cap permeation testing. Instead, ARB made inclusion of fuel caps in fuel tank permeation testing optional. This provides the flexibility OPEI requested.

4.

Comment: CARB Document – TP-901 §3 Biases & Interference

CARB Language (proposed) – Relative humidity greater than 20% can bias the permeation results for certain plastics such as nylon. To identify bias due to humidity, relative humidity must be recorded daily.

OPEI/EMA Proposed Language Changes – DELETE

Comment / Reason – There are no provisions or guidelines for tank suppliers or ARB to estimate or offset results based on RH, therefore the data serves no purpose. Delete. (OPEI, November 17, 2016, letter p. 22)

Agency Response: The language was deleted in 15-day changes.

5.

Comment: CARB Document – TP-901 §3 Biases & Interference

CARB Language (proposed) – To ensure the losses attributed to permeation are accurately quantified during this test procedure, the tanks must remain exposed to the constant 40 °C temperature for each 24-hours (± 30 minutes) period.

OPEI/EMA Proposed Language Changes – To ensure the losses attributed to permeation are accurately quantified during this test procedure, the tanks must remain exposed to the constant 40 °C **+/- 2 °C** temperature for each 24-hours (± 30 minutes) period.

Comment / Reason – No tolerance provided for temperature control (OPEI, November 17, 2016, letter p. 22)

Agency Response: A tolerance of ± 2 °C was added as requested.

6.

Comment: CARB Document – TP-901 §5(f) Equipment

CARB Language (proposed) – A relative humidity measuring instrument capable of measuring the relative humidity (RH) accurately to within ± 2 percent RH.

OPEI/EMA Proposed Language Changes – DELETE

Comment / Reason – There are no provisions or guidelines for tank suppliers or ARB to estimate or offset results based on RH, therefore the data serves no purpose. (OPEI, November 17, 2016, letter p. 22)

Agency Response: The relative humidity measuring instrument was made an optional piece of equipment.

7.

Comment: CARB Document – TP-901 §6 Fuel

CARB Language (proposed) – Testing according to this procedure shall be conducted using 1) LEV III Certification Gasoline as defined in part II, section A.100.3.1.2 of the California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light Duty Trucks, and Medium-Duty Vehicles, as last amended September 2, 2015, or 2) the fuel defined in 40 CFR Part 1065.710(b).

OPEI/EMA Proposed Language Changes – Testing according to this procedure shall be conducted using 1) LEV III Certification Gasoline as defined in part II, section A.100.3.1.2 of the California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light Duty Trucks, and Medium-Duty Vehicles, as last amended September 2, 2015, or 2) the fuel

defined in 40 CFR Part 1065.710(b), **low level gasoline ethanol blend for general testing.**

Comment / Reason – EPA 1065.710(b) Table 1 includes a variety of test fuel specifications “general testing”, “low-temperature testing” and “high altitude testing”. “General testing” should be specified. (OPEI, November 17, 2016, letter p. 22)

Agency Response: Clarification was added to specify fuel for general testing.

8.

Comment: CARB Document – TP-901 §6 Fuel

CARB Language (proposed) – The fuel specified in part II, section A.100.3.1.1 of the California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light Duty Trucks, and Medium-Duty Vehicles, as last amended September 2, 2015, may be used as an alternative test fuel to certify fuel tanks for use on engines and equipment through model year 2019.

OPEI/EMA Proposed Language Changes – **…and through model year 2021 for less than or equal to 80cc fuel tanks**

Comment / Reason – It is impractical to certify a tank and cap in 2022 and recertify in 2020 with just fuel change. (OPEI, November 17, 2016, letter p. 22-23)

Agency Response: ARB declined to make the requested change in this comment. The non-chronological timeline which OPEI states would be impractical is a combination of that in the proposed amendments and that proposed by OPEI in its Comment N.15. Since it is not a timeline proposed by ARB, the comment is not directed at the substance of the proposed amendments or the process by which they were adopted. The inclusion of fuel caps in fuel tank testing was made optional, which addresses the issue underlying this comment.

9.

Comment: CARB Document – TP-901 §7 Calibration Procedure

CARB Language (proposed) – The balance listed in section 5(b) shall be calibrated annually by an independent organization using National Institute of Standards and Technology (NIST)-traceable mass standards. The accuracy of the balance shall be checked using NIST-traceable mass standards prior to and following mass measurements (25 fuel tanks

maximum). At minimum, the accuracy shall be checked at approximately 80% percent, 100%percent, and 120% percent of the fuel tanks' expected test mass. If the measured mass of any of the NIST-traceable mass standards drifts more than ± 0.1 gram for a balance with 0.1 gram sensitivity, ± 0.02 grams for a balance with 0.01 gram sensitivity, or ± 0.002 grams for a balance with 0.001 gram sensitivity between initial and final measurements, the balance shall be re-calibrated or a different balance that is within specification shall be used. The NIST-traceable mass standards shall be calibrated annually by an independent organization. The instrumentation for measuring permeation emissions according to section 12 of this test procedure must be calibrated as specified in section 4 of TP-902.

OPEI/EMA Proposed Language Changes – The balance listed in section 5(b) shall be calibrated **per the requirements of 40 CFR Part 1065.307 within 370 days of an measurement**. The accuracy of the balance shall be checked using NIST-traceable mass standards ~~**prior to and following mass measurements (25 fuel tanks maximum). At minimum, the accuracy shall be checked at approximately 80% percent, 100%percent, and 120% percent of the fuel tanks' expected test mass. If the measured mass of any of the NIST-traceable mass standards drifts more than ± 0.1 gram for a balance with 0.1 gram sensitivity, ± 0.02 grams for a balance with 0.01 gram sensitivity, or ± 0.002 grams for a balance with 0.001 gram sensitivity between initial and final measurements, the balance shall be re-calibrated or a different balance that is within specification shall be used.**~~ The NIST-traceable mass standards shall be calibrated **within 370 days of usage** ~~**annually**~~ by an independent organization. The instrumentation for measuring permeation emissions according to section 12 of this test procedure must be calibrated as specified in section 4 of TP-902.

Comment / Reason – No precedent for having to send equipment to independent organizations. OPEI is unaware of any calibration issues identified by ARB. (OPEI, November 17, 2016, letter p. 23)

Agency Response: The requirement for balances to be calibrated by an independent organization and the accuracy checks were removed. Specification was added that balances shall be calibrated annually according to the balance manufacturer's instructions. ARB declined to reference 40 CFR 1065 and retained the annual requirement as annual calibration is a standard recommendation made by balance manufacturers.

10.

Comment: CARB Document – TP-901 §8 Durability Demonstration

CARB Language (proposed) – A durability demonstration is required prior to any permeation testing. These durability tests are designed to ensure that the fuel tank assembly meets the permeation emission standard throughout

the useful life of the equipment. A durability demonstration consists of the following tests:

OPEI/EMA Proposed Language Changes – A durability demonstration is required prior to any permeation testing, **if your emission control technology involves surface treatment or other post processing treatments such as epoxy coating. Metal tanks that are not either fully welded or brazed together also require durability testing.** These durability tests are designed to ensure that the fuel tank assembly meets the permeation emission standard throughout the useful life of the equipment. A durability demonstration consists of the following tests:

Comment / Reason – ARB deleted "fuel tanks with a secondary operation for drilling holes for insertion of fuel line and grommet systems may have these eliminated for purposes of durability and permeation testing". (OPEI, November 17, 2016, letter p. 23)

Agency Response: ARB declined to make the requested change because of other changes that were made and existing provisions for omitting parts of the durability demonstration. The durability demonstration consists of a pressure test, slosh test, ultraviolet radiation exposure, and fuel cap installation cycles. Provisions are included to omit most of the durability demonstration for some or all fuel tanks, depending on their design and application. The pressure test is not required for fuel tanks that have no features that would cause positive or negative pressures to accumulate during normal operation or storage. The fuel cap installation cycles were made optional in 15-day changes. The ultraviolet radiation exposure may be omitted if no part of the fuel tank, including the filler neck and fuel cap, will be exposed to light when installed on an engine. ARB restored the sentence, "Tanks that have a secondary operation for drilling holes for insertion of fuel line and grommet system may have these eliminated for purposes of durability and permeation testing," as mentioned in the response to Comment L.2. No provision is included for omitting the slosh test because fuel sloshing may affect materials other than those comprising a surface treatment or other post processing treatment. However, the existing slosh test procedure was restored as an option.

11.

Comment: CARB Document – TP-901 §8 Sealing Demonstration

OPEI/EMA Proposed Language Changes – ADD New Section 8 – SEALING PROCEDURE (Renumber all sections thereafter, staring with 9 Durability Demonstration)

Unless otherwise noted in the procedure, seal all openings in each fuel tank as they would be sealed when installed on a production engine for all durability, preconditioning and permeation tests prescribed hereafter. A plug, cap, or coupon may be used to seal any

fuel hose connection openings. Optionally, fuel hose connection openings need not be machined.

Comment / Reason – Sealing provision have changed. These should be included upfront, as they impact all testing from section 8 forward (currently only included in 8.2, Slosh Testing)

If fuel hose openings are machined, then plugged, capped or sealed with a coupon, it becomes a test of the laboratory's ability to seal the opening. (OPEI, November 17, 2016, letter p. 23-24)

Agency Response: ARB declined to make the change as requested, but made changes that addressed the concerns. ARB restored the sentence, "Tanks that have a secondary operation for drilling holes for insertion of fuel line and grommet system may have these eliminated for purposes of durability and permeation testing," as mentioned in the responses to Comments L.2 and L.10. This addresses OPEI's comment regarding fuel hose connection openings. Section 8.2 (the slosh test) addresses sealing the openings in the fuel tanks, and section 10 addresses sealing the fuel fill neck. Therefore, it is unnecessary to include the remainder of OPEI's suggested language.

12.

Comment: Specific areas of concern identified by EMA that may require additional interaction with CARB Staff to agree upon regulatory language in the proposed revision to TP-901 include the following:

1. Section 8.1 Pressure Test: The change to delete the language regarding secondary operations implies that the tank being tested must include any accessory components that may require an opening in the fuel tank. This appears to be a back door approach to requiring that the fuel tank accessories be regulated components through a test procedure, rather than a regulatory requirement. Expansion of the fuel tank being certified to include the fuel tank accessories significantly changes the regulatory requirements for fuel tanks in part because fuel tank testing per TP-901 is a fuel tank material permeation test whereby the tank tested has been determined to have characteristics that make it the highest emission configuration. A fuel tank component EO is currently utilized to represent a large number of different fuel tank configurations including many different fuel tanks that may have various accessories.

2. Section 8.2 Slosh Test: The proposed alignment with the EPA testing provision in 40 CFR part 1060.520(a)(3) should be included as an option not a requirement. ARB has shown no test data to demonstrate that either method provides different test results and the EPA method increases the length of the slosh preconditioning from 6 days to 46 days.

3. Section 10 Sealing Procedure: The change to seal the tank with the fuel tank cap used in the durability demonstration (section 8.4) implies that the fuel tank cap is considered part of the fuel tank being tested. However, nowhere in the proposed regulation is the fuel tank defined as including the fuel tank cap. This appears to be a back door approach to requiring that the fuel tank cap be a regulated component through a test procedure, rather than a regulatory requirement. Expansion of the fuel tank being certified to include the fuel tank cap significantly changes the regulatory requirements for fuel tanks in part because fuel tank testing per TP-901 is a fuel tank material permeation test whereby the tank tested has been determined to have characteristics that make it the highest emission configuration. A fuel tank component EO is currently utilized to represent a large number of different fuel tank configurations including many different fuel tank cap opening sizes. In addition, the fuel tank EO Holder is very often not the party that provides the fuel tank cap in the final product utilizing the fuel tank. EPA· regulations recognize this potential and allow the fuel tank cap to be tested and certified separately per 40 CFR part 1060.103(e). If CARB's intention is to regulate the fuel tank cap, the requirements associated with the tank cap must be described in the regulatory requirements. In the case where the tank cap is to be regulated TP:-901 must include information regarding the testing of the fuel tank cap. In addition, the ability to test a fuel tank per TP-901 must not preclude the ability of the fuel tank test results being utilized to certify fuel tanks that utilize a cap that is different than the cap utilized to conduct the tank testing. (EMA, November 17, 2016, letter p. 9-10)

Agency Response: To address part "1." of this comment, the language regarding secondary operations for drilling holes for insertion of fuel line and grommet system was restored in 15-day changes, as discussed in the responses to Comments L.2, L.10 and L.11. This language does not address other openings which may be present in the fuel tank.

ARB proposed to use the U.S. EPA slosh test procedure to align the requirement with U.S. EPA's, as this was a stated goal of the proposed amendments and a request from EMA. The existing slosh test procedure was restored as an option in 15-day changes to address part "2." of this comment.

To address part "3." of this comment, language was restored that allows fuel tanks to be sealed for permeation testing by fusion welding a coupon over the fuel fill neck or by another method using good engineering practices.

13.

Comment: CARB Document – TP-901 §8.2 Durability Demonstration – Slosh Test

CARB Language (proposed) – A slosh test shall be performed by filling each fuel tank to 50 percent of its nominal capacity with the fuel specified in section 6 of this procedure and rocking it from an angle deviation of + 15° to −15° from level at a rate of 15 cycles per minute for a total of one million total cycles. Seal all openings in each fuel tank as they would be sealed when installed on a production engine during slosh testing. A plug, cap, or coupon may be used to seal any openings to which a hose or tube is normally attached.

OPEI/EMA Proposed Language Changes – A slosh test shall be performed by filling each fuel tank to 50 percent of its nominal capacity with the fuel specified in section 6 of this procedure and rocking it from an angle deviation of + 15° to −15° from level at a rate of 15 cycles per minute for a total of one million total cycles. **As an alternative, slosh testing may be performed using a laboratory sample orbital shaker table, or similar device to the subject the tank to a centripetal acceleration of at least 2.4 m/2^2 at a frequency of 2 +/- 0.25 cycles per second for one million cycles.**

~~Seal all openings in each fuel tank as they would be sealed when installed on a production engine during slosh testing. A plug, cap, or coupon may be used to seal any openings to which a hose or tube is normally attached.~~

Comment / Reason – ARB deleted orbital shaker table option, 2.4m/s^2 @ 2 cycle/sec. This option greatly reduces the test time required (from 42 to 7 days). Include as option.

This is the only location “sealing” is addressed. This should be included above, and reflect the requirements of section 8, 9, 10, 11 and 12. (OPEI, November 17, 2016, letter p. 24)

Agency Response: The existing slosh test procedure was added as requested. ARB declined to delete the sealing instructions in this section. Once fuel tanks are sealed for the slosh test, it is not necessary to remove any of the seals on openings other than the fuel fill neck, which is sealed with a fuel cap for the slosh test, ultraviolet radiation exposure, fuel cap installation cycles, and preconditioning. Section 10 provides instructions for sealing the fuel fill neck prior to conducting permeation testing in section 11 or section 12 of TP-901. Also see responses to Comments L.11 and L.12.

14.

Comment: CARB Document – TP-901 Section 11 Fuel Cap Testing

CARB Language (proposed) – Nothing

OPEI/EMA Proposed Language Changes – **If you measure a fuel tank's permeation emissions with a nonpermeable covering in place of the fuel cap under this section, you must separately measure permeation**

emissions from a fuel cap. You may show that your fuel tank and fuel cap meet emission standards by certifying them separately or by combining the separate measurements into a single emission rate based on the relative surface areas of the fuel tank and fuel cap. Measure the fuel cap's permeation emissions as follows:

(a) Select a fuel cap expected to have permeation emissions at least as high as the highest-emitting fuel cap that you expect to be used with fuel tanks from the emission family. Include a gasket that represents production models. If the fuel cap includes vent paths, seal these vents as follows:

(1) If the vent path is through grooves in the gasket, you may use another gasket with no vent grooves if it is otherwise the same as a production gasket.

(2) If the vent path is through the cap, seal any vents for testing.

(b) Attach the fuel cap to a fuel tank with a capacity of at least one liter made of metal or some other impermeable material.

(c) Use the procedures specified in this section TP-901 to measure permeation emissions except you do not need to perform the durability testing on the fuel cap test fixture. Calculate emission rates using the smallest inside cross sectional area of the opening on which the cap is mounted as the fuel cap's surface area.

Comment / Reason – Additional procedures for testing caps cap separately. Separate cap certification procedures need consideration (not included w/ these comments). (OPEI, November 17, 2016, letter p. 24-25)

Agency Response: ARB made sealing fuel tanks with fuel caps optional for permeation testing. See also the responses to Comments L.12 and L.13. ARB declined to add separate fuel cap test procedures because the comment was addressed as described above.

15.

Comment: CARB Document – TP-902 §1 Applicability

CARB Language (proposed) – This Test Procedure, TP-902, is used by the Air Resources Board to determine the diurnal and resting loss evaporative emissions from small off-road engines with gross power production less than or equal to 19 kilowatts. Small off-road engines are defined in Ttitle 13, California Code of Regulations (CCR), section 2401 et seq.

OPEI/EMA Proposed Language Changes – This Test Procedure, TP-902, is used by the Air Resources Board to determine the diurnal and resting loss evaporative emissions from small off-road engines ~~with gross power~~

~~production less than or equal to 19 kilowatts~~. Small off-road engines are defined in Ttitle 13, California Code of Regulations (CCR), section 2401 et seq.

Comment / Reason – Small off-road engine is already defined in Section 2401, so all that is necessary here is "small off-road engines."

ARB determines the 19kW power limit (from SORE to LSI) based on the NET power in the certified configuration, not the GROSS power production.

TP-902 is also be referenced by LSI. Delete SORE all together or add LSI reference. (OPEI, November 17, 2016, letter p. 25)

Agency Response: The reference to gross power production was removed. Large spark ignition (LSI) engines are not the subject of this rulemaking. The LSI regulations establish the applicability of TP-902 to LSI engines.

16.

Comment: Specific areas of concern identified by EMA that may require additional interaction with CARB Staff to agree upon regulatory language in the proposed revision to TP-902 include the following:

1. In section 3 the deletion of the purge of the carbon canister is not appropriate. Elimination of the canister purge prior to diurnal testing at a minimum would increase the variability in the test results given the canister initial test state will be a variable. CARB Staff appears to contradict the currently published CARB position regarding canister requirements as described in SORE Evaporative Certification FAQ' s item 1-38, revised 11-9-2015. In addition, none of the testing reported by CARB in support of this rulemaking reflects this change to the test procedure.

a. Recommend that CARB reinstate the "Purge carbon canister (if so equipped) with 400 bed volumes of nitrogen or dry air at the canister manufacturer's recommended rate" language.

2. Also in section 3 the change from total hydrocarbons to total organic gases is not justified. To the best of our knowledge CARB has not conducted any testing of SSI evaporative systems that could be considered measurement of total organic gases. CARB Testing and the referenced EPA test instrumentation in 40 CFR Part 86.107-96 (b) are described as "evaporative emission hydrocarbon and methanol analyzers." For example, this instrumentation cannot be used to measure common organic gases such as Formaldehyde.

a. Recommend that CARB reinstate the current "total hydrocarbons measured" language.

3. In section 4 the change of reference from 40 CFR 86.107-96 to 40 CFR 86.107-98 is not appropriate as -98 is associated with refueling emissions whereas -96 is associated with evaporative emissions.

4. In section 5.1 the change in preconditioning conditions from 30° C ± 10° C to a minimum of 38° C is not justified. As proposed the minimum temperature for the 140 day minimum preconditioning period is the same as the current accelerated procedure temperature that only required a 30 day, 60 day, or 140 day based on tank wall thickness. EMA recommends that the current standard and alternative conditioning language be retained.

5. In section 6 the inclusion of the option to use EPA test fuel described in 40 CFR Part 1065.710(b) is appreciated but incomplete as there are three fuel options included in the CFR reference. EMA recommends adding language to clarify that "general testing" fuel is being specified. (EMA, November 17, 2016, letter p. 10-11)

Agency Response: To address part "1." of this comment, the carbon canister purge language was restored in Figure 1 of section 5 and in section 5.2. Carbon canister purge language was not restored in section 3, but section 3 is a summary, whereas section 5.2 describes the actual procedure. Also see the response to Comment L.2. To address part "2." of this comment, the term "organic material hydrocarbon equivalent" was used where "total hydrocarbons" was used previously. This term is consistent with that used for light-duty vehicles, which use the same instrumentation for diurnal emission testing referenced in TP-902. No change was made in response to part "3." of this comment. Subpart 40 CFR 86.107-98 is an update to subpart 40 CFR 86.107-96, and states that provisions of 40 CFR 86.107-96 apply where no new language is included in 40 CFR 86.107-98.

To address part "4." of this comment, the existing default preconditioning temperature of 30 ± 10 °C was restored. The proposed amendments include a provision to perform accelerated preconditioning at elevated temperature, but do not specify minimum lengths of preconditioning based on fuel tank wall thickness. The clarification requested in part "5." of this comment was added, as also discussed in the response to Comment L.7.

17.

Comment: CARB Document – TP-902 §5.2 Test Procedure

CARB Language (proposed) – Following the preconditioning period, drain the fuel tank and refill to 50 percent of its nominal capacity with test fuel. ~~For evaporative emission control systems that use a carbon canister, the canister must be purged following the preconditioning period but prior to initiating the hot soak test. Purging consists of drawing 400 bed volumes of nitrogen or dry air through the canister at the canister manufacturer's recommended purge rate~~….

OPEI/EMA Proposed Language Changes – Following the preconditioning period, drain the fuel tank and refill to 50 percent of its nominal capacity with test fuel. **For evaporative emission control systems that use a carbon canister, the canister must be purged following the preconditioning period but prior to initiating the hot soak test. Purging consists of drawing 400 bed volumes of nitrogen or dry air through the canister at the canister manufacturer's recommended purge rate**

Comment / Reason – There is no evidence to support the assumption that a canister will be purged in 15 minutes. (OPEI, November 17, 2016, letter p. 25)

18.

Comment: In the proposed amendments, ARB has removed the carbon canister purge requirement as stated in TP-902, "Test Procedure for Determining Diurnal Evaporative Emissions from Small Off-Road Engines and Equipment" Section 4, "General Summary of Test Procedure." ARB stated that the proposal was to better replicate real world use, however ARB made an arbitrary determination of what occurs in the real world. They have not conducted any testing nor provided any supporting data for this change. In fact, the test procedure also requires a 140-day soak period at 30 degrees Celsius which is not representative of real world, but this was not addressed by ARB or removed from the test procedure.

ARB assumes that 15 minute of engine operation will purge the carbon canister and therefore forced purging would not be necessary. Note that passive purge canisters are not affected by engine operation. They purge when the temperature drops (i.e. when the engine is stored during the night). Active purge canisters are purged by engine operation but there are many different types and sizes of carbon canisters, and in addition there is a wide variety of equipment and models. It is not conclusive at this time if 15 minutes of engine operation will completely purge the carbon canister in all cases. Testing would need to be conducted.

Honda has been engaged with ARB staff through OPEl since September of last year starting with the validation study results and soon thereafter with the May 2016 release of these proposed amendments.

We appreciate ARB staffs engagement with industry however, ARB's intent to better simulate real world by simply removing the carbon canister purge requirement is not appropriate. Because of this, Honda requests that the Board postpone the decision on the proposed amendments until more study is conducted collaboratively with industry and ARB to develop a real world test plan for diurnal evaporative emissions.

Thank you for your time and consideration of these comments. Please contact me directly if you have any questions. (Honda, November 17, 2016, letter p.1-2)

19.

Comment: My comments are in regards to the ARB proposed amendments to the diurnal emission test procedure, TP902 section 4.

We have been engaged with ARB staff since September of last year starting with the validation study results, and soon thereafter with the 2016 proposed amendments. The draft proposal was released to industry May of this year.

We greatly appreciate ARB staff's engagement with industry. However, we do still have some concerns.

In the diurnal test procedure, the carbon canister purge requirement has been removed, which has caused concern with Honda. By removing the purge requirement, the test will begin with a fully charged canister. Because of this, we are concerned that the equipment will not pass the evaporative test as it stands today.

ARB's intent was to better replicate real-world use. However, they have made arbitrary determination of what occurs in the real world without conducting any tests or presenting any supporting data. The proposal simply removes the carbon canister purge requirement. This assumes that 15 minutes of engine operation will completely purge the carbon canister.

I like to point out that passive purge canisters are not affected by engine operation, as they purge in cooler temperatures. For example, when you leave a lawn mower in a garage overnight.

Active purge canisters are purged by engine operation. However, there are many different types and sizes of carbon canisters, in addition to many different types of equipments and models. It is not conclusive at this time if 15 minutes is enough to completely purge the canister in all cases.

We would like to engage dialogue with ARB staff to best determine what would be a real-world test. We feel that this would be -- this would need to be a collaborative effort with industry and ARB. Therefore, we encourage the Board to direct the staff to open up that dialogue with us and the rest of industry.

Again, I thank you for your time. (Honda, November 17, 2016, public hearing transcript p. 72 line 22 – p. 74 line 12)

Agency Response to Comments L.17 – L.19: The carbon canister purge procedure was restored in section 5.2, as also discussed in the responses to Comments L.2 and L.16.

20.

Comment: CARB Document – TP-901 TP-902 Alternative Test Procedures

Comment / Reason – Alternative Test Procedures must be shared for the good of both industry and ARB. If an ATP is approved, then anyone should be able to use it. This maintains a level playing field for the industry. If the ATP is not shared, then many applicants may unknowingly submit the exact same, or nearly same, ATP. Then ARB would need to review and approve or deny the same ATP many times over. This is a waste of ARB resources. Not sharing ATPs is a departure from ARB's standard operation, and no compelling reason is presented. (OPEI, November 17, 2016, letter p. 25)

Agency Response: An alternative test procedure may be approved under the proposed amendments if an applicant demonstrates through comparison testing that the alternative test procedure is equivalent to TP-901 or TP-902. Alternative test procedures are approved on a case-by-case basis, and may not be used without approval from the Executive Officer.

M. Comments on Definitions

1.

Comment: CARB Document – §2752 Definitions

CARB Language (proposed) – (1) “Coextruded Multilayer Fuel Tank” means a multilayered high-density polyethylene fuel tank with a continuous nylon or ethylene vinyl alcohol layer(s) present within the walls of the tank.

OPEI/EMA Proposed Language Changes – Delete definition

Comment / Reason - 2766 (a) deletes exemption for these tanks so definition not needed. In contrast, CARB deleted SI tanks and small volume tanks. Should be consistent with deletions either way. (OPEI, November 17, 2016, letter p. 8)

Agency Response: The definition was deleted in 15-day changes.

2.

Comment: CARB Document – §2752 Definitions

CARB Language (proposed) – (New #): Cold Weather Equipment

OPEI/EMA Proposed Language Changes – Option 1—delete HH fuel line requirement in regulation.

OR

Option 2—add Cold Weather (CW) equipment definition (below) and regulate accordingly.

From EPA 1054.801:

Cold-weather equipment is limited to the following types of handheld equipment: chainsaws~~, cut-off saws, clearing saws, brush cutters with engines at or above 40cc, commercial earth and wood drills, and ice augers. This includes earth augers if they are also marketed as ice augers~~

Comment / Reason – CARB proposed language has created unique CA only product. EPA regulates only fuel feed lines and EPA regulates CW lines differently on HH equipment (due to safety concerns). Industry understands it is not CARB's intention to create a more severe standard in this "clean up".

From page xi of soreisor: *"Aligning ARB SORE certification and test procedures with U.S. EPA procedure, where possible, eliminates duplicative requirements and gives manufacturers the option to certify fuel tanks based on a common set of data acceptable to both ARB and U.S. EPA."*

ARB validation study results indicate HH product already compliant with comparable "diurnal" limits without lines. (OPEI, November 17, 2016, letter p. 8)

Agency Response: ARB declined to delete the fuel line permeation emission standard for ≤ 80 cc engines. U.S. EPA has similar requirements. A less stringent fuel line permeation emission standard for fuel lines used on chainsaws was added to section 2755. ARB declined to define "cold weather equipment" because the emission standard for chainsaws added to section 2755 accomplished the same objective. The validation studies did not include ≤ 80 cc engines, and the E10 study tested some ≤ 80 cc engines for informational purposes.

3.

Comment: CARB Document – §2752 Definitions

CARB Language (proposed) – (5) "Equivalent Fuel Line" means a fuel line that permeates less than the nominal fuel line being replaced and less than or equal to 15 grams of TOG per square meter of surface area in contact with fuel per day when tested per SAE J1737 (Stabilized May 2013) at 40ºC or higher, and ambient pressure using LEV III certification gasoline. The fuel

defined in 40 CFR Part 1065.710(b) or CE10 may be used as an alternative test fuel.

OPEI/EMA Proposed Language Changes – See comment

Comment / Reason – OK as written if CARB includes definition for fuel lines as indicated below and if CARB intends SAE 1737 to be used only to determine an equivalent fuel line. (OPEI, November 17, 2016, letter p. 9)

Agency Response: A definition for “fuel line” was included in 15-day changes. No change to the definition of “equivalent fuel line” is requested in this comment. The definition was modified to refer to ROG (reactive organic gases) instead of TOG (total organic gases), to include additional fuel line test procedures, and to specify fuel for general testing defined in 40 CFR Part 1065.710(b) in response to Comments L.7 and L.16.

4.

Comment: Definition of "Evaporative Family" is related to small off-road engines whereas the evaporative regulation is designated as "Off-Road Equipment."

a. EPA has defined evaporative family 40 CFR Part 1060.230)(a) as: For purposes of certification, divide your product line into families of equipment (or components) that are expected to have similar emission characteristics throughout their useful life.

b. Recommend CARB revise the definition to read: ""Evaporative Family" means small off-road engines or equipment models in the same engine class that are grouped together...." (EMA, November 17, 2016, letter p. 3-4)

5.

Comment: CARB Document – §2752 Definitions

CARB Language (proposed) – (~~9~~8) “Evaporative Family” means small off-road engine models in the same engine class that are grouped together based on similar fuel system characteristics as they relate to evaporative emissions. For engines with displacement less than or equal to 80 cubic centimeters (cc), all models using fuel tanks constructed by the same process with the same material and the same permeation control may be grouped into one evaporative family. The engine family and the evaporative family may be considered equivalent at the manufacturer’s discretion.

OPEI/EMA Proposed Language Changes – (~~9~~8) “Evaporative Family” means small off-road engine **or equipment** models in the same engine class that are grouped together based on similar fuel system characteristics as they relate to evaporative emissions. For engines with displacement less than or equal to 80 cubic centimeters (cc), all models using fuel tanks **and fuel supply** lines constructed by the same process with the same material

and the same permeation control may be grouped into one evaporative family. The engine family and the evaporative family may be considered equivalent at the manufacturer's discretion.

Comment / Reason – For less than or equal to 80cc must have same line and tank to use same exhaust and evap family name. Info must be provided in application for certification. Tank family and line family must still be certified separately.

Definition of "Evaporative Family" is related to small off-road engines whereas the evaporative regulation is designated as "Off-Road Equipment."

EPA defined evaporative family (40 CFR Part 1060.230)(a)) as: For purposes of certification, divide your product line into families of equipment (or components) that are expected to have similar emission characteristics throughout their useful life. (OPEI, November 17, 2016, letter p. 10)

Agency Response to Comments M.4 and M.5: The definition of "evaporative family" was modified to include equipment models in addition to engine models, and to specify criteria for the similarity of fuel lines used on all models in an evaporative family for ≤ 80 cc engines.

6.

Comment: Definition of a "Fuel Line" is missing. By not including a CARB definition the EPA regulatory definition per 40 CFR Part 1060.801 would apply: "Fuel line means hoses or tubing designed to contain liquid fuel....". (EMA, November 17, 2016, letter p. 4)

7.

Comment: CARB Document – §2752 Definitions

CARB Language (proposed) – (New #): Fuel line

OPEI/EMA Proposed Language Changes – Fuel line means hose or tubing designed to contain liquid fuel (including molded hose or tubing). This does not include any of the following:

(1) Fuel tank vent lines.
(2) Segments of hose or tubing whose external surface is normally exposed to liquid fuel inside the fuel tank.
(3) Hose or tubing designed to return unused fuel from the carburetor to the fuel tank for handheld engines.
(4) Primer bulbs that contain liquid fuel only for priming the engine before starting.

To measure permeation, use SAE J30, J1527 or for fuel lines with a nominal inner diameter below 5.0 mm, you may alternatively measure fuel line permeation emissions using the equipment and procedures for weight-

loss testing specified in SAE J2996. Determine your final emission result based on the average of measured values over the 14-day sampling period. Maintain an ambient temperature of 23±2 °C throughout the sampling period.

Comment / Reason – CARB and EPA test methods differ. CARB not harmonized with EPA if different test method used. Means double cert testing. Adopt EPA 1060.515 (d) language.

If CARB includes all lines in permeation regulation, it creates unique CA only product. EPA does not regulate vent or return lines on HH equipment. Additionally, *CARB* provides no evidence to support that vapor lines contribute significant evaporative emissions. Industry understands it is not CARB's intention to create a more severe standard in this "clean up".

From page xi of soreisor: *"Aligning ARB SORE certification and test procedures with U.S. EPA procedure, where possible, eliminates duplicative requirements and gives manufacturers the option to certify fuel tanks based on a common set of data acceptable to both ARB and U.S. EPA."* (OPEI, November 17, 2016, letter p. 9)

Agency Response to Comments M.6 and M.7: A definition of "fuel line" was added, as also discussed in the response to Comment M.3. The requested fuel line test procedures were added in 15-day changes. ARB declined to decrease the required temperature for fuel line permeation testing from 40 °C to 23 ± 2 °C. Approximately 100 fuel lines have been tested at 40 °C and certified with ARB since 2005. Decreasing the test temperature would be inconsistent with ARB's current requirements and the record does not support it. Defining "fuel line" excluded several fuel line types from the permeation requirements.

8.

Comment: Deleting definition of ROG and inserted the definition of TOG:
a. CARB has not reported TOG analysis in any testing performed on engines or equipment related to this rulemaking
b. Recommend CARB reinstate the definition of ROG (EMA, November 17, 2016, letter p. 4)

Agency Response: The definition of "ROG" was restored in section 2752(a)(23), and the word "ROG" was restored where it is used in the existing regulations.

9.

Comment: CARB Document – §2752 Definitions

CARB Language (proposed) – (24) “Total Organic Gases (TOG)” means compounds of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate.

OPEI/EMA Proposed Language Changes – DELETE. Keep (23) ROG definition

Comment / Reason – CARB has not reported TOG analysis in any testing performed on engines or equipment related to this rulemaking (OPEI, November 17, 2016, letter p. 10)

Agency Response: The definition of TOG was deleted and the definition of ROG restored in 15-day changes. A new definition of “organic material hydrocarbon equivalent” was added and used where “total hydrocarbons” or “HC” had been used in the existing regulations. ROG is used where it had been used in the existing regulations.

N. Comments on Certification Requirements and Procedures

1.

Comment: CARB Document – §2753(b) Certification Requirements & Procedures

CARB Language (proposed) – “…to the diurnal emission standards in section 2754 or 2757 of this Article must include a determination of the engine or equipment models in the evaporative family that are expected to exhibit the highest and lowest diurnal emission rates relative to the applicable diurnal emission standards and detail the criteria used to make that determination.”

OPEI/EMA Proposed Language Changes – DELETE. Keep 2753(b) and 2754(a)-(c) same as current, with separate “diurnal” and “design based” certification strategies.

Comment / Reason – Design based is a critical certification option for non-integrated equipment manufacturers. In 2015, almost 100 equipment manufacturers relied on design based certification for more than 600 >80cc engine/equipment evaporative families (approx. 87% of >80cc families). The need for, and recognition that a design based certification and compliance strategy can be effective for non-integrated manufacturers has been confirmed by ARB through its adoption of design based certification and compliance strategies in the 2016 published and effective SI Marine Watercraft rule.

Furthermore, Industry believes design based strategy will be an effective certification strategy with the inclusion of industries June 2016 test and design provisions. ARB staff’s adoption of industries proposal in September 2016, without any confirmation testing, and despite additional cost and

burden on industry, implies that these provisions will result in the significant improvements needed to assure compliance for both the diurnal and design based strategies.

Finally, the validation study results provide no evidence that diurnal-based" certification is more effective than "design-based certification. (OPEI, November 17, 2016, letter p. 10)

Agency Response: ARB declined to retain sections 2753(b) and 2754(a)-(c) in their existing form. The issues presented in this comment have been addressed in responses to comments on design certification (F.1 – F.6), the validation studies (G.1 – G.26), and compliance testing (I.1 – I.7).

2.

Comment: §2753(b) " ... expected to exhibit the highest and lowest diurnal emission rates...must also include one of the following for the engine or equipment model in the evaporative family that is expected to exhibit the highest diurnal emission rate...."

a. Inclusion of lowest adds significant burden with no benefit

b. Recommend CARB revise the requirement to read: "...expected to exhibit the highest ~~and lowest~~ diurnal emission rates ... must also include one of the following for the engine or equipment model in the evaporative family that is expected to exhibit the highest diurnal emission rate...."

c. Also recommend that CARB add an example of the criteria expected to be provided for each option, for example:

i. Diurnal emission test - include the rationale for the highest determination

ii. Component emission test results: (a) highest fuel tank permeation rate expected (g/day); (b) highest fuel line permeation rate expected (g/day); and (c) other components not specifically identified

iii. EO Numbers - include: (a) highest fuel tank permeation rate expected (g/day); (b) highest fuel line permeation rate expected (g/day); and (c) other components not specifically identified. (EMA, November 17, 2016, letter p. 4)

3.

Comment: CARB Document – §2753(b) Certification Requirements & Procedures

CARB Language (proposed) – "…to the diurnal emission standards in section 2754 or 2757 of this Article must include a determination of the engine or equipment models in the evaporative family that are expected to exhibit the highest and lowest diurnal emission rates relative to the applicable diurnal emission standards and detail the criteria used to make that determination."

OPEI/EMA Proposed Language Changes – "…to the diurnal emission standards in section 2754 or 2757 of this Article must include a determination of the engine or equipment models in the evaporative family that are expected to exhibit the highest **~~and lowest~~** diurnal emission rates relative to the applicable diurnal emission standards and detail the criteria used to make that determination."

Comment / Reason – Notwithstanding the above comments to this new language, inclusion of lowest adds significant burden with no benefit (OPEI, November 17, 2016, letter p. 11)

4.

Comment: CARB Document – §2753(b) Certification Requirements & Procedures

OPEI/EMA Proposed Language Changes – Diurnal emission test – include the rationale for the highest determination Component emission test results: (a) highest fuel tank permeation rate expected (g/day); (b) highest fuel line permeation rate expected (g/day); and (c) other components not specifically identified EO Numbers – include: (a) highest fuel tank permeation rate expected (g/day); (b) highest fuel line permeation rate expected (g/day); and (c) other components not specifically identified

Comment / Reason – Recommend ARB add an example of the criteria expected to be provided for each option (OPEI, November 17, 2016, letter p. 11-12)

Agency Response to Comments N.2 – N.4: The requirement to determine which model in an evaporative family is expected to exhibit the lowest diurnal emission rate relative to the applicable diurnal emission standard was removed in 15-day changes. ARB declined to add examples of criteria used to make the determination of the engine expected to exhibit the highest diurnal emission rate relative to the applicable diurnal emission standard. Manufacturers have been determining which model exhibits the highest emissions for over 10 years and are better suited to determine which criteria will cause their engines to have the highest diurnal emissions relative to the applicable standard.

5.

Comment: §2753(f) "Beginning in model year 2020, an applicant who has not held an Executive Order of Certification for an evaporative emission control system..."

a. Requiring diurnal emissions test results for a new applicant who has never received certification before imposes requirements unfairly against new manufacturers.

b. Recommend that CARB remove this section to allow new manufacturers the same certification flexibility as established manufacturers. (EMA, November 17, 2016, letter p. 4-5)

Agency Response: This subsection was deleted in 15-day changes.

6.

Comment: §2753(g) "A Holder whose Executive Order has been suspended or revoked..."

a. Requiring diurnal emission test results for certification for any EO holder that has any evaporative family suspended is premature and too broad. EO holders may have several evaporative families that are not related to a family with a suspended EO. In addition an EO may be suspended and not determined to be in noncompliance or revoked imposing an unjust burden on the Holder.

b. Recommend that CARB revise the requirement to read: "A Holder who's Executive Order has been ~~suspended or~~ revoked..." (EMA, November 17, 2016, letter p. 5)

7.

Comment: CARB Document – §2753(g) Certification Requirements & Procedures

CARB Language (proposed) – A Holder whose Executive Order has been suspended or revoked must submit diurnal emission test results, determined using TP-902, for all evaporative families using engines with displacement greater than 80 cc, as described in (b) of this section, according to the following schedule:,,,

OPEI/EMA Proposed Language Changes – A Holder whose Executive Order has been ~~**suspended or**~~ revoked must submit diurnal emission test results, determined using TP-902, for ~~**all**~~ evaporative families using engines with displacement greater than 80 cc, as described in (b) of this section, according to the following schedule:

CONSIDER ALTERNATIVE PENALITY/ENFORCEMENT OPTIONS

Comment / Reason – Requiring diurnal emission test results for certification for any EO holder that has any evaporative family suspended is premature and too broad. EO holders may have several evaporative families that are not related to a family with a suspended EO. In addition an EO may be suspended and not determined to be in noncompliance or revoked imposing an unjust burden on the Holder.

Additionally, requiring that every family be performance tested is overly burdensome. With the time required for durability testing, the high demand

for SHED testing time, and multiple families to test, it may be impossible to complete this testing in 1 year.

Finally, the escalation for repeat offenses is not a deterrent. After the first offense, and completion of initial diurnal testing, the data would simply be carried over. Also, none of this is a deterrent for Holders that have performance-certified all of their families, and hence unfairly punishes those that choose to design-certify. (OPEI, November 17, 2016, letter p. 12)

Agency Response to Comments N.6 and N.7: ARB declined to make the requested change. Suspension of an Executive Order only occurs after non-compliance has been established. An Executive Order holder may also request that a suspension be stayed pending a hearing under section 2771. This requirement is intended to deter non-compliance. Data carryover is subject to Executive Officer approval, per CP-901 section 5.4 and CP-902 section 4.4, and may not be granted in all cases.

8.

Comment: §2754(a) "...on and after the model years indicated."
a. Given that all model years included in the table are historical the proposed changes are being imposed without lead-time required to implement any changes required including revised requirements specified in sections (b), (c), (d), and (e).
b. Recommend that CARB add 2020 model year implementation dates for all three categories specified in Table 1 linked to the revisions being adopted by this rulemaking.
c. As stated above the change in certification test fuel results in a significant change in standard stringency. For the 2020 model year additions to the table above the applicable diurnal and permeation standard limit values should be increased 20%. (EMA, November 17, 2016, letter p. 5)

9.

Comment: CARB Document – §2754(a) Diurnal Emissions & Design Standards

CARB Language (proposed) – <u>..on and after the model years indicated.</u>

OPEI/EMA Proposed Language Changes – Recommend ARB add 2020 model year implementation dates for all Table 1 categories

Comment / Reason – Given that all model years included in the table the proposed changes are being imposed without lead-time required to implement any changes required including revised requirements specified in sections (b), (c), (d), and (e). (OPEI, November 17, 2016, letter p. 12-13)

Agency Response to Comments N.8 and N.9: ARB declined to add effective dates for standards that became effective between 2009 and 2013. The standards are not changing, so it is not necessary to restate them. The requirement to use E10 certification fuel applies to model year 2020 and later engines. Similarly, all > 80 cc evaporative families must comply with the diurnal emission standards in model year 2020 and later model years, as specified in the proposed amendments to CP-902. To provide the requested clarification, ARB modified section 2758 to specify the applicable test procedures used to determine compliance based on model year. EMA's request to relax the diurnal emission standards is addressed in the response to Comment K.2.

10.

Comment: §2754(b)(2) "...all fuel lines exposed to liquid fuel or fuel vapor...." is a significant change to the definition of the regulatory component currently described as a fuel hose (see Table 1). CARB Staff has not conducted any testing that demonstrates the change to include vapor lines. The proposed language appears to change the definition of a fuel line established by U.S. EPA without providing such a CARB specific definition.

a. Recommend that CARB establish a CARB specific definition for fuel line if the intention is to include vapor lines.

b. Recommend that CARB include the increased cost of changing vapor lines to provide permeation control in the cost benefit analysis for the rulemaking.

c. Recommend that CARB be required to provide test data demonstrating the emission benefit of using low permeation vapor lines prior to adopting this provision. (EMA, November 17, 2016, letter p. 5-6)

Agency Response: A definition of "fuel line" was added, as also discussed in the responses to Comments M.3, M.6 and M.7. This definition excludes fuel lines containing only fuel vapor from permeation requirements, so ARB removed the estimated costs for these fuel lines from the Economic and Fiscal Impact Statement (Form 399) for these amendments. Manufacturers will have the flexibility to choose uncontrolled or low-permeation fuel lines for those fuel lines not included in the definition of "fuel line."

11.

Comment: §2754(c) "....shall also do one of the following:" provides two options identified as (1) and (2) but does not align with the requirements specified in §2753(b) that includes a third option.

a. Recommend CARB add an option (3) that reads: "Provide EO Numbers- including fuel tank, fuel line, and carbon canister." (EMA, November 17, 2016, letter p. 6)

12.

Comment: CARB Document – §2754(c) Diurnal Emissions & Design Standards

CARB Language (proposed) – An applicant certifying engines or equipment to comply with the diurnal emission standards under this section shall also do one of the following:

OPEI/EMA Proposed Language Changes – ADD **(3) Provide EO numbers, including fuel tank, fuel line, fuel cap and carbon canister**

Comment / Reason – ARB provides two options identified as (1) and (2) but does not align with the requirements specified in §2753(b) that includes a third option. (OPEI, November 17, 2016, letter p. 13)

Agency Response to Comments N.11 and N.12: Existing language allowing Executive Order numbers for components to be submitted was restored in 15-day changes.

13.

Comment: §2754.1(b)(5) revised language requires the Holder to certify each model within an evaporative family. As such the requirement eliminates the benefit of grouping models into families whereby the highest emitting model in the family is tested and utilized to represent the family for averaging and banking purposes. Holders forego their ability to generate additional credits from lower emitting products in exchange for reduced certification and testing burden associated with certification of each model.

a. Recommend that CARB reinstate the current language associated with the evaporative family and determination of the worst case model. (EMA, November 17, 2016, letter p. 6)

14.

Comment: CARB Document – §2754.1 (5) Diurnal Emissions & Design Standards

CARB Language (proposed) – A ~~manufacturer~~Holder shall certify each model within an evaporative ~~families~~family to an EMEL and shall determine an Evaporative Family Emission Limit Differential (EFELD) for each model in an evaporative family. (EFELD is to be set for each model) ...

The EFELD is determined based on the diurnal test results, in accordance with TP-902, of the worst case model of engine or equipment within an evaporative family. The worst case model of engine or equipment is defined as the engine or equipment expected to produce the highest negative or the smallest positive EFELD within the family on a per unit basis.
(Deletion of conditions for the worst case)

Comment / Reason – TP902 test does not need to be conducted on all models for evaluation.

Evaluation by the worst case should be accepted if it has logic.

There will be no meaning to group models in families if the worst case is not accepted.

Furthermore, conducting TP902 test on each model for all models is expected to require enormous burden. (OPEI, November 17, 2016, letter p. 13)

Agency Response to Comments N.13 and N.14: Section 2754.1(b)(5) was clarified by removing language referring to certifying each model within an evaporative family. Evaporative model emission limits do vary by model as fuel tank volume varies, however. This is true under the existing regulations and the proposed amendments. The proposed amendments do not require every model to be tested.

15.

Comment: CARB Document – §2755 Permeation Emissions Standards

CARB Language (proposed) – On or after the model year set out herein, fuel tanks used on equip must not exceed the following permeation rates:

Permeation Emission Standards
(gms per meter^2 per day)

Effective Date Model Year	**Applicability**	**Requirement[1] ~~Tank Permeation~~**
2007	Small off-road engines with displacements ~~<~~≤ 80 cc	Fuel tank permeation emissions shall not exceed 2.0 grams per square meter of internal surface area per day as determined by TP-901.
2020	Small off-road engines with displacements ≤ 80 cc	Fuel lines shall meet the requirements of section 2754(b)(2)

[1] Permeation rate must be measured to two significant digits.

(a) Data documenting the permeation rate of fuel tanks and fuel lines must be included in a certification application.

(b) The test procedure for determining compliance with the fuel tank permeation emission standard is TP-901, which is incorporated by

reference herein. The test procedure used to determine compliance with the fuel line permeation emission standard is SAE J1737 (Stabilized May 2013).

OPEI/EMA Proposed Language Changes – On or after the model year set out herein, fuel tanks used on equip must not exceed the following permeation rates:

Permeation Emission Standards
(gms per meter^2 per day)

Effective Date Model Year	**Applicability**	**Requirement[1] ~~Tank Permeation~~**
2007	Small off-road engines with displacements ≤ 80 cc	Fuel tank permeation emissions shall not exceed 2.0 grams per square meter of internal surface area per day as determined by TP-901 **adopted July 26, 2004**.
2018	Small off-road engines with displacements ≤ 80 cc	Fuel lines shall be certified to EPA 1060.102(d)(2) or (3) as applicable.
2022	Small off-road engines with displacements ≤ 80 cc	Fuel lines shall not exceed 15 grams per square meter of internal surface area per day (225 g/m2/day for CW lines) as determined by paragraph (a) and (c) below. Fuel tanks shall not exceed 2.0 grams per square meter of internal surface area per day as determined by paragraph (a) and (b) below.

[1] Permeation rate must be measured to two significant digits.

(a) Data documenting the permeation rate of fuel tanks and fuel lines must be included in a certification application.

(b) The test procedure for determining compliance with the fuel tank permeation emission standard isTP-901, which is incorporated by reference herein.

(c) The test procedure used to determine compliance with the fuel line permeation emission standard is SAE J30, J1527 or SAE J2996. Determine your final emission result based on the average of measured values over the 14-day sampling period. Maintain an ambient temperature of 23±2 °C throughout the sampling period

Comment / Reason – CARB procedures for fuel line testing differs from EPA.

CARB does not have separate std for CW fuel lines. EPA test fuel for CW lines and other lines is different.

Changes to TP-901 (include fuel cap, test temp and fuel) all raise permeation levels. OPEI has shown data to CARB indicating some existing tanks do not pass the 2.0 gram requirement. The 2020 time frame is not sufficient for manufacturers to complete testing, redesign and certify new tanks. OPEI HHPC proposal is an interim step effective in 2018 which adds fuel lines and then the CARB proposal in 2022. Cert in 2018 would include a statement of compliance for each family by the manufacturer that states the EPA information.

OPEI understands it is not CARB's intention to create a more severe standard in this "clean up".

Note: Section 2753(a) (dates) will require adjustments accordingly (not included with these comments). (OPEI, November 17, 2016, letter p. 14)

Agency Response: Section 2755 was modified by clarifying that fuel lines must not exceed the standards listed in the table, and by adding a less stringent fuel line permeation emission standard for chainsaws, as also discussed in the response to Comment M.2. A reference to section 2758 was added for the applicability of the existing or amended version of TP-901 by model year. Additional fuel line test procedure options were added, as also discussed in the responses to Comments M.6 and M.7. ARB declined to decrease the required temperature for fuel line permeation testing from 40 °C to 23 ± 2 °C, as discussed in the response to Comment M.7. TP-901 requirements were modified in 15-day changes to address OPEI's concerns, as discussed in the responses to Comments L.1 – L.20. Because the concerns have been addressed, it is not necessary to change implementation dates for the proposed requirements.

16.

Comment: §2756 Fuel Cap Performance Standard does not include the change included in proposed revisions to TP-901 associated with fuel tank cap installation and removal. It is unclear if the change is intended to apply to engines or equipment tested per TP-902. It is also unclear if there is a process (as prescribed by EPA) to obtain a component EO for a fuel tank cap or what the applicable standard would be. As proposed the additional requirements for fuel tank caps indirectly prescribed by the changes to TP-901 constitute an underground regulation that is not supported by the rulemaking record.

a. Recommend that CARB clarify the fuel tank cap permeation requirements for design certified engines/equipment and what fuel tank cap requirements are for performance certified engines/equipment.
b. Recommend that CARB be required to provide test data demonstrating the emission benefit of including the fuel tank cap prior to adopting this provision.
c. Recommend that CARB add a model year effective date to the table whereby fuel tank caps must be installed/removed 300 cycles for all small off-road engines/equipment >80 cc using the same rationale as described in §2754(a) above.
d. Also recommend that CARB add an option to obtain a component EO for a fuel tank cap to provide alignment with U.S. EPA as specified in 40 CFR §1060.521. (EMA, November 17, 2016, letter p. 6)

17.

Comment: CARB Document – §2756 Fuel Cap Performance Standard

OPEI/EMA Proposed Language Changes – ADD **(c) Fuel cap shall meet the 300 cycle on/off durability requirement outlined in TP-901**

ADD **Requirement (c) to Table for MY 2020**

ADD
Starting with the 2020 model year, if you measure a fuel tank's permeation emissions with a nonpermeable covering in place of the fuel cap under TP-901, you must separately measure permeation emissions from a fuel cap. You may show that your fuel tank and fuel cap meet emission standards by certifying them separately or by combining the separate measurements into a single emission rate based on the relative surface areas of the fuel tank and fuel cap. Measure the fuel cap's permeation emissions as described in TP-901.

ADD **Requirement that fuel caps are included to Table for MY 2020**

Comment / Reason – Fuel Cap Performance Standard does not include the change included in proposed revisions to TP-901 associated with fuel tank cap installation and removal. It is unclear if the change is intended to apply to engines or equipment tested per TP-902.

Additionally, starting with model year 2020, when fuel caps are required to be certified, the RO should provide a provision to certify and obtain an EO for the fuel cap separately, aligned with EPA 1060.521.

Note, additional procedures for testing caps cap separately have been outlined below for TP-901. Separate cap certification procedures need consideration (not included w/ these comments). (OPEI, November 17, 2016, letter p. 15)

Agency Response to Comments N.16 and N.17: The fuel cap installation cycles in TP-901 were made optional, since permeation testing of fuel tanks is not required to be conducted with the fuel cap. TP-902 includes fuel cap installation cycles, and clarification was added to section 2756 that fuel caps for > 80 cc engines must meet the durability requirements in TP-902 beginning in model year 2020. ARB declined to require separate permeation testing and certification of fuel caps, as discussed in the responses to Comments L.2 and L.3. The proposed amendments to TP-901 were incorporated by reference in the regulations and included in the 45-Day Notice, published in accordance with the requirements of the APA, and were therefore not an underground regulation. However, permeation testing of fuel tanks with fuel caps was made optional in 15-day changes, as discussed in the responses to Comments L.2, L.3, L.8 and L.14.

18.

Comment: CARB Document – §2760 Defects Warranty Requirements for Small Off-Road Engines

CARB Language (proposed) – A list of all evaporative emission warranty parts must be included with each new engine or equipment subject to this Article. The evaporative emission warranty parts list shall include all parts whose failure would increase evaporative emissions, and may contain, but is not limited to, the following parts:

(1) Fuel Tank*
(2) Fuel Cap
(3) Fuel Lines (for liquid fuel and fuel vapors)
(4) Fuel Line Fittings
(5) Clamps**
(6) Pressure Relief Valves**
(7) Control Valves**
(8) Control Solenoids**
(9) Electronic Controls**
(10) Vacuum Control Diaphragms**
(11) Control Cables**
(12) Control Linkages**
(13) Purge Valves
(14) ~~Vapor Hoses~~ Gaskets
(15) Liquid/Vapor Separator
(16) Carbon Canister
(17) Canister Mounting Brackets
(18) Carburetor Purge Port Connector

~~*Note: The parts list for equipment ≤80 cc only includes the fuel tank.~~
**Note: As they relate to the evap emission control system.

OPEI/EMA Proposed Language Changes – A list of all evaporative emission warranty parts must be included with each new engine or

equipment subject to this Article. The evaporative emission warranty parts list shall include all parts whose failure would increase evaporative emissions, and may contain, but is not limited to, the following parts:

(1) Fuel Tank*
(2) Fuel Cap
(3) Fuel Lines (for liquid fuel and fuel vapors***)
(4) Fuel Line Fittings
(5) Clamps**
(6) Pressure Relief Valves**
(7) Control Valves**
(8) Control Solenoids**
(9) Electronic Controls**
(10) Vacuum Control Diaphragms**
(11) Control Cables**
(12) Control Linkages**
(13) Purge Valves***
(14) Vapor Hoses Gaskets**
(15) Liquid/Vapor Separator
(16) Carbon Canister
(17) Canister Mounting Brackets
(18) Carburetor Purge Port Connector

~~*Note: The parts list for equipment ≤80 cc only includes the fuel tank.~~
**Note: As they relate to the evap emission control system.

***__Note: For equipment using engines with engines ≤80 cc, fuel lines mean only the fuel feed lines and does not include return lines, vent lines or purge bulbs.__

Comment / Reason – Suggest to say "(for liquid fuel and fuel vapors (as applicable)" or add a new row "Fuel feed lines (HH)".

Item (1) Fuel Tank includes an "*" but the related "*" footnote is deleted. Recommend that CARB undelete the "*" footnote related to fuel tanks

Item (13) Purge Valves should also include the "**" footnote as all purge valves are not related to evaporative emission control systems.

Item (14) Gaskets is added but should also include the "**" footnote as all gaskets are not related to evaporative emission control systems. (OPEI, November 17, 2016, letter p. 18)

Agency Response: The list of parts given in this section provides examples but is not exhaustive, nor will all of the parts apply to all evaporative families. An asterisk (*) was added beside "Purge Valves" and "Gaskets" to clarify that these parts would be covered only if they are part of the evaporative emission control system, that is, if their failure would increase evaporative emissions. ARB declined to make the other requested

changes that might imply parts whose failure would increase evaporative emissions were not covered by the emissions warranty. All parts whose failure would increase evaporative emissions are subject to the warranty requirements of this section, regardless of whether they are subject to emission standards. This is consistent with U.S. EPA evaporative emission warranty requirements in 40 CFR 1060.120. To limit warranty requirements in California would leave California consumers with less warranty protection than consumers in other states and require manufacturers to develop separate warranty statements for California. This would be contradictory to the goal of aligning ARB's requirements with those of U.S. EPA where practical, without compromising ARB requirements.

19.

Comment: CARB Document – CP-901 §5 Certification

CARB Language (proposed) – For each evaporative family, the applicant must select and test five samples of an equipment fuel tank to show compliance with the permeation emissions standard.

OPEI/EMA Proposed Language Changes – For each evaporative family, the applicant must select and test **three** samples of an equipment fuel tank to show compliance with the permeation emissions standard. (OPEI, November 17, 2016, letter p. 25)

Agency Response: This comment is similar to part of Comment L.3 and is addressed in the response to Comment L.3

20.

Comment: CARB Document – CP-901 §5 Certification

CARB Language (proposed) – Discussion point:
The fuel tank selected must use the same method of permeation control and be constructed of the same material as specified in the certification application.

Comment / Reason – Need confirmation. What does this mean if it is the same material from a different supplier? (OPEI, November 17, 2016, letter p. 26)

Agency Response: This is a question rather than a comment. A change in supplier for a material might be a change that would affect evaporative emissions and require a running change to be submitted. Such a situation would be assessed on a case-by-case basis to determine whether new certification testing would need to be conducted.

21.

Comment: CARB Document – CP-901 §5.3 Certification

CARB Language (proposed) – Fuel lines shall be tested according to SAE J1737 (Stabilized May 2013) and the results submitted to ARB as part of the certification application.

OPEI/EMA Proposed Language Changes – Fuel lines shall be tested according to SAE J30**, SAE J1737 (Stabilized May 2013), SAE J1527 or SAE J2996** and the results submitted to ARB as part of the certification application.

Comment / Reason – Need to harmonize with EPA (OPEI, November 17, 2016, letter p. 26)

Agency Response: The requested fuel line test procedures were added. See also responses to Comments M.6, M.7 and N.15.

22.

Comment: CARB Document – CP-901 §5.3 Certification

CARB Language (proposed) – If, after review of the application for certification including all test data submitted by the applicant and any other pertinent data or information the Executive Officer determines is necessary, the Executive Officer determines that the application has satisfied the 3 conditions set forth in this procedures, the Executive Officer may approve the application and issue an Executive Order.

OPEI/EMA Proposed Language Changes – If, after review of the application for certification including all test data submitted by the applicant and any other pertinent data or information the Executive Officer determines is necessary, the Executive Officer determines that the application has satisfied the 3 conditions set forth in this procedures, the Executive Officer **shall** approve the application and issue an Executive Order.

Comment / Reason – If everything is provided, there should be no reason for the EO not to approve. (OPEI, November 17, 2016, letter p. 26)

Agency Response: The restatement of language from the proposed amendments includes a page number ("3") as part of a sentence. This page number appears at the bottom of the page in the proposed amendments rather than in a sentence. The Executive Officer does not deny certification without valid reason. ARB declined to make the requested change.

23.

Comment: CARB Document – CP-901 §5.4 Data Carryover

CARB Language (proposed) – … Permeation emissions data for one evaporative family may not be used to certify another evaporative family…

Comment / Reason – Subject to addressing labelling concerns. Need to harmonize a label for exhaust and evap. (OPEI, November 17, 2016, letter p. 26)

Agency Response: The existing regulations and proposed amendments allow for combination of exhaust and evaporative emission labels. Specific labeling concerns are addressed in the responses to Comments O.1 – O.4.

24.

Comment: CARB Document – CP-901 §6.11 Submission of an engine or equipment unit

CARB Language (proposed) – Upon the request of the Executive Officer, an applicant shall submit for inspection or testing an engine or equipment unit from an evaporative family with the certification application.

Comment / Reason – What is ARB's expectation to comply with this in the event an engine or piece of equipment is not yet in production?

Other than the actual tank used for certification this could be impossible based on production timing. Applications are submitted several months ahead of production and it is common for parts produced with production tooling to not be available until immediately before the start of production.

CARB insists we keep the engines used to generate the emission data. Does CARB expect the same for fuel tanks? In the case where a fuel tank is sealed with a fusion welded coupon it would be difficult to perform any retesting of that tank. (OPEI, November 17, 2016, letter p. 26)

Agency Response: This requirement was modified to allow a sample to be provided when it is available.

25.

Comment: CARB Document – CP-901 §7 Application Format Instructions

CARB Language (proposed) – Proof the applicant has met the bond requirements of title 13, Cal. Code Regs., section 2774

All results from all tests performed on the units tested for certification, including test results from invalid tests or from any other tests, whether or

not they were conducted according to TP-901 or SAE J1737 (Stabilized May 2013). The Executive Officer may require an applicant to send other information to confirm that testing according to TP-901 or SAE J1737 (Stabilized May 2013) was valid.

Fuel tank description for each fuel tank in the evaporative family
- Model number
- Total capacity (L)
- Nominal capacity (L)
- Internal surface area (m^2)
- Tank materials, including pigments, plasticizers, UV inhibitors, or other additives that are expected to affect control of emissions
- Gasket material
- Production method
- Permeation barrier
- Engineering drawings
- Executive Order number, if applicable

Description of each fuel line model in the evaporative family
- Model number
- Internal diameter (mm)
- Length (mm)
- Materials and methods used to construct the line
- Permeation barrier
- Engineering drawings
- Executive Order number, if applicable

Description of criteria (e.g., seam length, barrier and wall thickness, ratio of internal surface area to volume, presence of high-permeation materials, presence of accessories) used to determine which fuel tanks in the evaporative family exhibit the highest and lowest permeation emission rates relative to the applicable permeation emission standards

Description of evaporative emission control system, including a diagram

OPEI/EMA Proposed Language Changes – All results from all tests performed on the units tested for certification, including test results from invalid tests **~~or from any other tests, whether or not they were conducted according to TP-901 or SAE J1737 (Stabilized May 2013)~~**. The Executive Officer may require an applicant to send other information to confirm that testing according to TP-901, SAE J1737 (Stabilized May 2013), **SAE J30, SAE J1527 or SAE J2996** was valid.

Fuel tank description for each fuel tank in the evaporative family
- Model number
- Total capacity (L)
- Nominal capacity (L)
- Internal surface area (m2)
- Executive Order number, if applicable

If certification is not based on a fuel tank component Executive Order number, the additional information shall be provided:

- Tank materials, including pigments, plasticizers, UV inhibitors, or other additives that are expected to affect control of emissions
- Gasket material
- Production method
- Permeation barrier
- ~~Engineering drawings~~

Description of each fuel line model in the evaporative family

- Model number
- Internal diameter (mm)
- Length (mm)
- Executive Order number, if applicable

If certification is not based on a fuel line component Executive Order number, the additional information shall be provided:

- Materials and methods used to construct the line
- Permeation barrier
- ~~Engineering drawings~~

Description of criteria (e.g., seam length, barrier and wall thickness, ratio of internal surface area to volume, presence of high-permeation materials, presence of accessories) used to determine which fuel tanks in the evaporative family exhibit the highest ~~and lowest~~ permeation emission rates relative to the applicable permeation emission standards

~~Description of~~ A diagram of evaporative emission control system~~, including a diagram~~

Comment / Reason – Should ARB adopt a bonding worksheet, similar to EPA?

Requirement “or from any other tests” is too vague. If additional tests or data is required, test procedures and pass/fail criteria should be specified in the RO or TP. Providing “other tests” without specific guidance or criteria opens the door for subjective interpretation of the impact of test results b ARB Certification Staff.

If EO is provided, not all information should be required. Reorganize requirements.

Engineering drawings may be requested at any point. However to require to include with certification would require a running change for any drawing changes, regardless of if it impacts emissions or not. This will create unnecessary work for manufacturers and ARB Certification staff.

If EO is provided, not all information should be required. Reorganize requirements.

Inclusion of lowest adds significant burden with no benefit

"Description of evaporative emission control system" in addition to the information already provided is not clear, and may be subjective. ARB should define "evaporative emission control system", and should provide an example of a typical SORE "description" in the accompanying FAQ or include a specific list such as was provided for fuel tanks and fuel lines to eliminate any subjectivity if this requirement remains. (OPEI, November 17, 2016, letter p. 26-28)

Agency Response: OPEI's question about a bonding worksheet is addressed in the response to Comment J.1. The requirement to submit all test results was modified to require results only from emissions-related tests to be submitted. A provision was added to submit executive order numbers for fuel tanks and fuel lines in lieu of some of the description for these components. A provision was added to simplify engineering drawings submitted to ARB. The requirement to determine which model is expected to exhibit the lowest permeation emissions relative to the applicable standard was deleted. ARB declined to modify the requirement to provide a description of the evaporative emission control system, including a diagram. SORE manufacturers have been providing such descriptions and diagrams for more than 10 years. These typically include part labels on the diagram and describe briefly how the system operates.

26.

Comment: Specific areas of concern identified by EMA that may require additional interaction with CARB Staff to agree upon regulatory language in the proposed revision to CP-902 include the following:

1. Section 4.3 Certification Testing is incomplete. Per section 4.1 the applicant may submit test results or Executive Order numbers for fuel tank, fuel lines, and carbon canister. Fuel line and fuel tank permeation testing is not prescribed by TP-902 but rather TP-901
   a. EMA recommends the language be revised to read: "...according to TP-902, or fuel line and tank penneation according to TP-901 as applicable with the results submitted to ARB...."
   b. Per above EMA also recommends the option to certify a fuel tank cap as a component.
2. Section 4.4 Data Carryover and Carryacross: The changes to remove the carryacross option should be reversed. Carryacross is a viable option for certification in some circumstances and as currently prescribed by CP-902 ARB has full authority to determine if such carryacross is appropriate.
3. Section 5.3 Emission Label: The requirement to submit an emission control system label at the time of certification is impractical. The certification process must be completed prior to production, therefore having a production label available at the time of the certification application submission is not possible. The stricken language regarding the submission

of information for review and ARB's right to request actual labels should be reinstated. (EMA, November 17, 2016, letter p. 8-9)

Agency Response: ARB declined to change section 4.3 of CP-902 in response to part "1." of this comment. The proposed amendments make minor editorial changes to this section, which is part of the certification overview and refers to TP-902 as the method for diurnal emission testing. Sections 2753 and 2754 of the regulations clearly allow for certification without conducting diurnal emission testing. ARB declined to restore the data carryacross provision in response to part "2." of this comment. Data carryacross is not needed. If two evaporative families are similar enough to justify using certification data for one family to represent the other family, the two families can be combined into one family. This saves time and lowers costs relative to having separate families. ARB declined to change section 5.3 of CP-902 in response to part "3." of this comment. The existing regulations require submission of label samples, and the proposed amendments simplify the description provided in CP-902, referring to the requirements of section 2759.

27.

Comment: CARB Document – CP-902 §6 Application Format Instruction

OPEI/EMA Proposed Language Changes – **See Comments to TP-902 §7 above. Delete "other tests". Description of fuel cap and carbon canister to follow same format as fuel tank and fuel line for information required when an EO is provided.**

Comment / Reason – Requirement "or from any other tests" is too vague. If additional tests or data is required, test procedures and pass/fail criteria should be specified in the RO or TP. Providing "other tests" without specific guidance or criteria opens the door for subjective interpretation of the impact of test results b ARB Certification Staff. (OPEI, November 17, 2016, letter p. 28)

Agency Response: This comment is similar to Comment N.25. Similar changes were made to section 6 of CP-902 and section 7 of CP-901. See the response to Comment N.25.

O. Comments on Labeling

1.

Comment: §2759(c)(4)(D) adding "...and location (state or country)...." is not appropriate and should not be required.

a. Recommend that CARB remove the added location requirement.

b. §2759(d) adding "...fuel lines, fuel tanks, and carbon canisters..." to the labeling applicability requirements should be aligned with EPA labeling

requirements as specified in 40 CFR §1060.137. (EMA, November 17, 2016, letter p. 7)

Agency Response: The requirement to include the location of manufacturer for the evaporative emission control system was deleted in 15-day changes. The labeling requirements for fuel lines, fuel tanks and carbon canisters are largely aligned with 40 CFR 1060.137. However, ARB must ensure certification and identification of components can be confirmed. Therefore, ARB declined to fully align component labeling requirements with 40 CFR 1060.137. These components are required to be labeled with the Executive Order holder's name, the Executive Order number, and model or part number. To accommodate EMA and OPEI's requests, the proposed amendments allow for the holder's three-character manufacturer code assigned by U.S. EPA to be used in place of the holder's name, as also allowed by U.S. EPA. Also the model or part number may be omitted if only one model or part number is certified under the applicable Executive Order. Therefore, only one piece of unique information, the Executive Order number, may be required to be included on a component label under ARB's requirements. Component Executive Order numbers are typically eight characters long (e.g., Q-17-000).

2.

Comment: CARB Document – §2759 Equipment and Component Labeling

CARB Language (proposed) – (a) Purpose. The Air Resources Board recognizes that certain emissions-critical and/or emissions-related parts must be properly labeled in order to identify equipment that meets applicable evaporative emission standards. These specifications require Holders to affix a certification label (or labels) on each production equipment unit (or engine, as applicable).

(b) Applicability. These specifications apply to:

(1) Engines, equipment, fuel lines, fuel tanks, and carbon canisters that have been certified to the applicable evaporative emission standards in this Article.

(2) Equipment manufacturers who use an engine certified under this Article if their equipment obscures the emissions control label of such certified engine.

(c) Complete Evaporative Emission Control System Certification Label Content and Location.

(1) A certification label must be welded, riveted or otherwise permanently attached by the Holder to an area on the engine or equipment unit in such a way that it will be readily visible.

(2) In selecting an acceptable location, the possibility of accidental damage must be considered (e.g. possibility of tools or sharp instruments coming in contact with the label). Each certification label must be affixed in such a manner that it cannot be removed without destroying or defacing the label, and must not be affixed to any engine (or equipment, as applicable) component that is easily detached from the engine or equipment as applicable.

(3) The certification label information must be written in the English language and use block letters and numerals (i.e., sans serif, upper-case characters) that must be of a color that contrasts with the background of the label.

OPEI/EMA Proposed Language Changes – Add a new paragraph "2759 (c)(5)" using modified language from EPA 1060.137(b)(5)ii)

(c)(5) Equipment manufacturers that also certify their engines with respect to exhaust emissions may use the same emission family name for both exhaust and evaporative emissions. If you use the provisions of this paragraph (c)(5) you must identify all the certified fuel-system components and the associated component codes in your engine's application for certification. In this case the label specified in this paragraph (5) may omit the information related to specific fuel-system components.

Comment / Reason – Need provision that integrated engine/equipment need not include both exhaust and evap families due to size constraints. This was discussed with ARB staff on the August 12 conference call. (OPEI, November 17, 2016, letter p. 15-16)

Agency Response: The definition of "evaporative family" includes the following sentence under the proposed amendments: "The engine family and the evaporative family may be considered equivalent at the manufacturer's discretion." ARB declined to add the requested paragraph because it is unnecessary. The requested provision is already included in the proposed amendments.

3.

Comment: CARB Document – §2759 Equipment and Component Labeling (continued)

CARB Language (proposed) – (4) The ~~engine or equipment~~certification label must contain the following information:

(D) The date (month & year) & location (state or country) of ~~engine manufacture (month and year) for~~ evaporative emission control systems ~~certified by the engine manufacturer or the date of equipment~~ manufacture

~~(month and year) for evap emission control systems certified by the equipment manufacturerer~~.

d) Evaporative Emission Control Component Certification Label Content and Location.

(1) Fuel lines, fuel tanks & carbon canisters certified to the evaporative emission standards in this Article shall be clearly labeled or marked by a permanent identification showing the Holder's name, the EO number, and model or part number in such a way that it will be readily visible when installed on an engine or equipment unit.

(2) The label information shall be written in the English language and use block letters and numerals (i.e., sans serif, upper-case characters) that are raised or contrast with the background of the label or component.

(3) The Holder's three-character manufacturer code assigned by U.S. EPA may be used in place of the Holder's name if the manufacturer code is declared in the certification application. If only one model or part number is certified under the applicable EO, the model or part number may be omitted from the label information.

OPEI/EMA Proposed Language Changes – (D) The date (month & year) ~~& location (state or country)~~ of ~~engine manufacture (month and year) for~~ evaporative emission control system~~s certified by the engine manufacturer or the date of equipment~~ manufacture ~~(month and year) for evap emission control systems certified by the equipment manufacturerer~~.

Use 1060.137 (slightly modified) as an alternate in a new paragraph (d)(4)

(4) Except as specified in paragraph (d) of this section, you may create the label specified in paragraph with the EO approval (b) of this section as follows:

(1) Include your corporate name.
(2) Include EPA's standardized designation for the family.
(3) State: "EPA COMPLIANT".
(4) Fuel tank labels must identify the FEL, if applicable.
(5) Fuel line labels must identify the applicable perm level. This may involve any of the following:
(i) Identify the applicable numerical emission standard (such as 15 g/m2/day).
(ii) Identify the applicable emission standards using EPA classifications (such as EPA NRFL).
(iii) Identify the applicable industry standard specification (such as SAE J30 R12).
(6) Fuel line labels must be continuous, with no more than 12 inches before repeating. Labels will be continuous if the space between

repeating segments is no longer than that of the repeated information.

(e) You may create an abbreviated label for your components. Such a label may rely on codes to identify the component. The code must at a minimum identify the cert status, your corporate name, and the emission family. For example, XYZ Manufacturing may label its fuel lines as "EPA-XYZ-A15" to designate that their "A15" family was certified to meet EPA's 15 g/m2/day standard. If you do this, you must describe the abbreviated label in your application for certification and identify all the associated information specified in paragraph (c) of this section

Comment / Reason – Requirement for location (state or country) of manufacture in 2759 (c)(4)(D) would require CA only label if language not revised as proposed.

(4) Optionally, you may meet the requirements of 1060.137, including deviations such as abbreviations.

EPA does not require EO number. This creates non-harmonization issues w/ EPA. Need option / alternatively to use EPA 1060.137? Include "these requirements also do not apply for… in 1060.135"? (OPEI, November 17, 2016, letter p. 17)

Agency Response: See the response to Comment O.1. SORE components have been labeled with the Executive Order holder's name, Executive Order number and model or part number for over 10 years. U.S. EPA requires labeling of components, as does ARB. An ARB Executive Order number is assigned by ARB, so would not be expected to be required by U.S. EPA. U.S. EPA does allow one label to be used to state compliance with U.S. EPA and ARB requirements. ARB declined to make changes beyond deleting the requirement to include the location of manufacturer for the evaporative emission control system; the proposed amendments already accommodate the request to align with U.S. EPA's requirements to the extent possible while still ensuring proper identification as ARB-certified components.

4.

Comment: CARB Document – §2759(d) Equipment and Component Labeling

CARB Language (proposed) – Fuel lines, fuel tanks, and carbon canisters certified to the evaporative emission standards in this Article shall be clearly labeled or marked by a permanent identification showing the Holder's name, the Executive Order number, and model or part number in such a way that it will be readily visible when installed on an engine or equipment unit.

OPEI/EMA Proposed Language Changes – "You may optionally put the required information on the engine emissions label (in the case of covered parts, limited space, etc…)"

Comment / Reason – The fuel line may be short, may be protected from heat, may be installed in such a way that the info is not always facing out. Need abbreviated provision per above (if family name and EO are required, then this is still an issue). (OPEI, November 17, 2016, letter p. 18)

Agency Response: The requirement to ensure ready visibility of component labels was deleted in 15-day changes. Component labels are required to be on the components rather than an engine label so individual components can be readily identified and their certification confirmed. Section 2759(i) provides for approval of alternate labeling, if it is necessary.

P. Comments on Reporting

1.

Comment: CARB Document – §2761 Emission-Related Defect and Sales Reporting Requirements (continued)

CARB Language (proposed) – (f) End-of-Year and Final Sales Reports.

(1) A Holder shall submit end-of-year and final sales reports for all of the Holder's evaporative families. End-of-year and final sales reports must indicate the actual sales volume for each evaporative family.

(2) Actual sales are sales calculated at the end of a model year on that model year's production, rather than estimates of production. The calculation of actual sales for end-of-year and final sales reports must be based on the location of the point of first retail sale (for example, retail customer or dealer) also called the final product purchase location. Upon Executive Officer approval, a Holder may calculate its eligible sales through market analysis. An educated and consistent estimate with the best available documentation will be acceptable as the final report of sales in California.

(3) (A) End-of-year sales reports must be submitted within 90 days of the end of the model year to The Chief, Emissions Compliance, Automotive Regulations and Science Division, Air Resources Board, 9528 Telstar, El Monte, CA 91731.

(B) Unless otherwise approved by the EO, final sales reports must be submitted within 270 days of the end of the model year to the Chief, Emissions Compliance, Automotive Regulations and Science Division, Air Resources Board, 9528 Telstar, El Monte, CA 91731.

(4) Failure by a Holder to submit any end-of-year or final sales reports in the specified time for any evaporative family subject to this Article is a violation of this section for each engine or equipment in the evaporative family covered by the report.

(5) Errors discovered by ARB or the Holder in the end-of-year sales report, may be corrected in the final report.

(6) Reports submitted to meet the requirements of section 2754.1 of this Article may be used to meet the requirements of this section.

(7) A report submitted to ARB to meet the requirements of section 1054.250 of the "California Exhaust Emission Standards and Test Procedures for New 2013 and Later Small Off-Road Engines; Engine-Testing Procedures (Part 1054)," adopted October 25, 2012, for an engine family may be used to meet the requirements of this section for an evaporative family which is equivalent to the engine family.

OPEI/EMA Proposed Language Changes – **Delete this section**

Comment / Reason – No purpose. Evap family alone cannot be used to estimate any values or inventory. (OPEI, November 17, 2016, letter p. 19)

Agency Response: ARB declined to delete this section. Based on discussions with OPEI and EMA, these requirements were modified in 15-day changes to require production volume reporting rather than sales reporting, since production volume is often used as a surrogate for sales and may better meet the intent of the requirements. Also, the requirements were modified to require reporting for each equipment type by engine family and fuel tank volume to provide more useful information. These reports will be valuable in validating information in the emissions inventory and better understanding industry and technology trends.

2.

Comment: CARB Document – §2761(f)(1) Emission-Related Defect and Sales Reporting Requirements

CARB Language (proposed) – A Holder shall submit end-of-year and final sales reports for all of the Holder's evaporative families. End-of-year and final sales reports must indicate the actual sales volume for each evaporative family.

OPEI/EMA Proposed Language Changes – **An engine or equipment EO holder** shall submit end-of-year and final sales reports for all of the Holder's evaporative families. End-of-year and final sales reports must indicate the actual sales volume for each evaporative family. **A component EO holder is not required to submit end-of-year & final sales reports.**

Comment / Reason – The requirement should be clarified as applicable only to engines or equipment and not components that have received an EO. (OPEI, November 17, 2016, letter p. 20)

3.

Comment: §2761(f)(1): "...all of the Holder's evaporative families....." should be clarified as applicable only to engines or equipment and not components that have received an EO. (EMA, November 17, 2016, letter p. 7)

Agency Response to Comments P.2 and P.3: The requirement in section 2761(f)(1) to submit end-of-year and final production volume reports applies only to evaporative families. The definition of "evaporative family" in section 2752(a)(8) includes engine or equipment models, but does not include components (fuel tanks, fuel lines or carbon canisters). As such, the production volume reporting requirements do not apply to components.

4.

Comment: §2761(f): End-of Year and Final Sales Report:
Due to the complex nature of the distribution channel of small-off road power equipment actual product sales is a number that most certificate holders would be unable to obtain. This requirement should be delayed until the updated inventory is completed as part of the CARB 2018 Board Proposal and relevant product distribution information would be available to all certificate holders. At that time CA fraction of total US sales could be applied to provide CARB with reliable estimates of sales on an annual basis. (EMA, November 17, 2016, letter p. 7)

Agency Response: ARB declined to delay implementation of the production volume reporting requirements for the reasons outlined in the responses to comments P.1 – P.3. ARB's update of the emissions inventory would not assist manufacturers in providing production volume reports, but production volume reports will assist in validating the emissions inventory and assessing industry trends.

5.

Comment: EMA and our member companies have and will continue to work with CARB staff and the Board to achieve California's air quality goals. But that needs to be a cooperative process involving both parties.

Also, in the staff presentation is the first time we've heard of newly announced reporting requirements on a quarterly basis for product that apparently is not currently regulated or documented with ARB. And we wonder how this will possibly be accomplished.

I'm happy to answer any questions the Board may have regarding EMA's written comments or my testimony here today. (EMA, November 17, 2016, public hearing transcript p. 71 line 7-18)

6.

Comment: In the staff PowerPoint they talked about quarterly reporting of zero-emission equipment that's not currently -- there's no certification process, there's no reporting process. So how are you going to get those reports -- and all of the other reports that they talk about are currently submitted annually for engines. And to change it to quarterly is a big deal. (EMA, November 17, 2016, public hearing transcript p. 71 line 22 – p. 72 line 3)

Agency Response to Comments P.5 and P.6: Production volume reporting for zero-emission SORE equipment was discussed as a possible 15-day change in the staff presentation during the November 17, 2016, public hearing. ARB decided not to include this requirement in the published 15-day changes.

Q. Comments on the Economic and Fiscal Impact Statement

1.

Comment: OPEI is concerned with the introduction of new requirements without sufficient cost analysis assessment. Additional evaporative controls for the <80cc category have been introduced despite strong evidence that this category is compliant with today's permeation requirements. Similarly, new requirements for the >80cc category have been introduced without sufficient, or in several cases any emissions inventory impact analysis. (OPEI, November 17, 2016, letter p. 3)

Agency Response: The Economic and Fiscal Impact Statement (Form 399) includes detailed cost estimates for the proposed amendments and includes changes based on OPEI's comments. The fuel line permeation standards added for ≤ 80 cc engines are the same standards adopted by U.S. EPA in 2008 and are already met on a voluntary basis by many manufacturers. Costs for voluntary diurnal emission testing have been added to the Economic and Fiscal Impact Statement (Form 399) for these amendments based on OPEI's comments.

2.

Comment: The Staff Report's Economic Impact Analysis/Assessment ("EIAA") fails to account for several costs associated with the proposed rule. Specifically, the record does not appropriately support the diurnal test costs related to removing the stand-alone design-based certification strategy and the compliance testing amendments which allow ARB to determine

compliance on all >80cc category units through diurnal testing, based as few as one test result from one unit.

In 2003 ARB "staff proposed that ARB post production testing for compliance be based on performance, i.e. compliance with a specified emission limit". In addition, staff noted "Industry did not embrace the approach, indicating any potential in-use liability measured against an emission limit would force them to perform pre-production certification emission testing, negating the benefits of the design-based approach" [ARB August 8, 2003 "Staff Report. Initial Statement of Reason for Proposed Rulemaking"]. This concern holds true today. Nevertheless, the proposed amendments look to change today's compliance strategy to allow ARB to determine compliance on all >80cc category units through diurnal testing. (OPEI, November 17, 2016, letter p. 4)

Agency Response: The proposed amendments do not eliminate design certification; it remains an option under the proposed amendments. The premise of design certification is that equipment meeting the design requirements will also meet the diurnal emission standards, as OPEI contends. The amendments do not require diurnal emission testing. If manufacturers prophylactically elect to perform diurnal emission tests, that is not a cost required by the amendments. If manufacturers do perform diurnal emission tests and certify under the performance approach, that cost is already imposed by the existing regulations and is not a new cost of the amendments. Nevertheless, costs for voluntary diurnal emission testing have been added to the Economic and Fiscal Impact Statement (Form 399) for these amendments based on OPEI's comments. The Economic and Fiscal Impact Statement (Form 399) for these amendments does account for decreased equipment and shipping costs associated with ARB testing one engine or equipment unit in its initial compliance test. Costs associated with compliance test failures have not changed under the proposed amendments. It is also impossible to project whether failures will occur, since the proposed amendments are intended to result in compliance of all > 80 cc evaporative families with the diurnal emission standards.

A compromise was reached in 2003 in which design-certified evaporative families were not required to meet the diurnal emission standards. The validation studies were included in the regulations as part of this compromise. The validation studies have demonstrated that improvements are needed to both design and performance certification to ensure all > 80 cc evaporative families meet the diurnal emission standards. The proposed amendments make the necessary changes, and the Economic and Fiscal Impact Statement (Form 399) estimates the costs associated with the proposed amendments.

3.

Comment: Based on OPEI analysis of the 2015 California evaporative family certifications, 64 of 84 >80cc category manufacturers do not certify

any equipment to the performance-based standard. As a result, these manufacturers will need to implement cost-heavy strategies to assure compliance with the proposed certification and compliance changes. As previously noted, in 2003 Industry estimated the cost for an individual manufacturer to build and operate a SHED for seven years is estimated at 3.5 million dollars. Staff deemed the absolute cost and resulting cost-effectiveness reasonable [ARB August 8, 2003 “Staff Report. Initial Statement of Reason for Proposed Rulemaking”]. Therefore, if every manufacturer opted to invest in a SHED industry cost would be 224 million dollars over 7 years. Alternatively, in its September 2016 Staff Report, ARB estimated that eliminating the design-based certification and compliance strategy would require ten additional SHEDs at test labs, and would cost industry $67,375,200 over five years. In order to meet its regulatory requirements, ARB must analyze these costs across the less than 19% of the SORE population that the proposed changes would impact. (OPEI, November 17, 2016, letter p. 4-5)

4.

Comment: In similar situations, California and federal cases have ruled that changes to the compliance enforcement procedures made the existing certification standards dramatically more stringent. This is the case today. Today's proposal is a major change, with strategy reconsiderations and significant cost impacts.

Our complete legal analysis has been prepared by OPEI counsel and it's included in OPEI's formal written comments.

In 2003 industry estimated the costs for an individual manufacturer to build and operate a SHED for seven years was $3.5 million. ARB staff deemed the absolute cost reasonable. Therefore, if 64 manufacturers invested in SHEDs, industry costs would be at least $224 million.

In September 2016, the staff report, ARB staff estimated that eliminating the design-based certification and compliance strategy would require ten additional SHEDs, at least -- at test labs and would cost industry more than $67 million.

However, these costs were not included in the cost impact analysis. In order to meet its regulatory requirements, ARB must analyze these costs across the less than 19 percent of the SORE population that the proposed changes would impact. (OPEI, November 17, 2016, public hearing transcript p. 62 line 14 – p. 63 line 13)

Agency Response to Comments Q.3 and Q.4: ARB included costs for voluntary diurnal emission testing of design-certified evaporative families in the Economic and Fiscal Impact Statement (Form 399) for these amendments in response to these comments and others. The proposed amendments do not require additional diurnal emission testing, but some

manufacturers may choose to perform diurnal emission testing on evaporative families that were previously design-certified. As explained in more detail in the Economic and Fiscal Impact Statement (Form 399) for these amendments, ARB assumed 50 percent of design-certified families would perform diurnal emission testing under the proposed amendments, since approximately 50 percent of design-certified families failed to meet the diurnal emission standards in the validation studies. The proposed amendments are expected to bring all > 80 cc SORE into compliance with the diurnal emission standards regardless of certification method, but, to consider a worst-case scenario, it was assumed that some manufacturers would choose to conduct diurnal emission testing for evaporative families that were previously design-certified.

All of the manufacturers who used only design-certification in 2015 had 11 or fewer evaporative families. The cost to conduct diurnal emission testing on 11 or fewer evaporative families is far less than the cost to build and operate a SHED, so it was assumed that manufacturers would conduct voluntary diurnal emission testing using existing SHEDs rather than building new SHEDs. Several independent testing laboratories have existing SHEDs and are expected to be able to accommodate additional testing if there is demand. The cost to conduct the voluntary testing using existing SHEDs (approximately $2.2 million of the $2.6 million estimated for additional diurnal emission testing under the proposed amendments) is much lower than the cost of building and operating additional SHEDs. It is expected that manufacturers would choose the less expensive route of testing at an independent laboratory rather than building a SHED if they did not continue to use design certification.

The estimated costs associated with eliminating design certification were analyzed in the context of an alternative to the proposed amendments. Since the proposed amendments do not eliminate design certification, the costs of the proposed amendments are different from those of the alternative. For these reasons, the Economic and Fiscal Impact Statement (Form 399) for these amendments does not conclude additional SHEDs would be needed even if design certification were eliminated. Existing SHEDs at independent laboratories are expected to be available to conduct the amount of testing estimated under this alternative.

5.

Comment: The attached legal analysis prepared by William M. Guerry, Chair of the Environmental Section at Kelley Drye and Counsel to OPEI discusses legal challenges associated with the proposed amendments. In particular, the analysis concludes that changes in the compliance strategy based on ARB's proposed enforcement test procedures would make the existing certification-standards dramatically more stringent and therefore would trigger all the procedural requirements that apply to Agency-Rulemaking relative to each particular modification. Counsel concludes that ARB has illegally failed to provide in its record ANY cost or

benefit estimates on the dramatic expansion of its regulations through the diurnal compliance mandate—in violation of the APA requirements. The complete analysis has been included in Annex C. (OPEI, November 17, 2016, letter p. 5)

Agency Response: The claim that the proposed amendments make the existing emission standards more stringent is addressed in the responses to Comments K.2, K.3, L.2 and N.8. The public process for this rulemaking has followed all APA requirements, including publishing a Notice of Proposed Action, holding a public hearing, estimating the economic impacts and responding to comments. Comments in OPEI's "Annex C" are addressed in this FSOR, as well.

6.

Comment: ANNEX C, OPEI COUNSEL LEGAL ANALYSIS – LEGAL CHALLENGES ASSOCIATED WITH THE PROPOSED AMENDMENTS – Based on my 25 years of submitting comments on ARB's proposed emissions regulations and the corresponding U.S. EPA waiver-proceedings under the federal Clean Air Act (CAA) [Section 209 (e) (2) of the CAA prohibit U.S. EPA from authorizing California regulations for non-road engines and equipment if the "California Standards and accompanying enforcement procedures are not consistent" with the federal CAA.], I have prepared this memo to support OPEI's comments to ARB on several legal issues associated with the evaporative emission regulations proposed on September 27, 2016 by ARB staff.

I. Overview – The proposed evaporative regulations would require outdoor power equipment with "design- certified" components that individually complied with the current, component–based standards (for fuel tanks, canisters and lines) — to now abruptly also comply for enforcement purposes, with an overall "diurnal standard" based on SHED-based compliance testing of the entire piece of integrated-equipment [Specifically, the proposed regulations state that the overall equipment "evaporative family will be deemed to have failed compliance testing"—if any engine or equipment has "diurnal emissions more than 5% above the applicable diurnal emission standard." (See § 2765 (8) of proposed regulations attached as Exhibit A).].

OPEI members (including several engine and equipment manufacturers with major operations located in California) have confirmed that the proposed regulations constitute a "de facto" mandate to require SHED-testing to demonstrate compliance with the diurnal standard. Without such SHED-testing, these manufacturers would incur substantial and unacceptable enforcement-risks that ARB's SHED-based compliance testing could result in numerous failures and the ultimate rescission of their design-based certifications and related penalties. In its comments, OPEI has proposed to ARB staff a dramatically more practical and cost-effective alternative solution to address compliance with design-based components

that have been installed in equipment. (OPEI, November 17, 2016, letter p. 37-38, 47-55)

The comment also includes an "Exhibit A" which contains reproductions of pages 1, 40-46 of the Proposed Regulation Order (Appendix A to the Staff Report).

Agency Response: The proposed amendments do not require diurnal emission testing (SHED testing) for certification of design-certified evaporative families. The compliance testing process is not based solely on ARB's initial test, as discussed in more detail in the responses to Comments I.1 and I.2. ARB declined to adopt OPEI's proposal because it would not ensure all > 80 cc evaporative families meet the diurnal emission standards. However, numerous changes were made in response to OPEI's comments, as discussed throughout this FSOR.

7.

Comment: II. Administrative Record – According to its Initial Statement of Reason (ISOR) from August 2003—supporting the current "Tier 3," evaporative standards—CARB Staff projected that each manufacturer would incur $3.5 million (over 7 years) to "shed-test" their equipment to meet a diurnal standard. In 2003, ARB determined that such diurnal-tests would not be cost-effective compared to the adopted "design-based" component program, which would still remain an "illusory" certification-only option under the new proposal. In 2003 rulemaking—after a review of extensive data—ARB only required walk behind mowers (WBMs) to be SHED tested. This is because the entire fuel system, including the tanks on WBMS, are produced in an integrated and generic fuel system in high volumes—by a handful of global engine manufacturers. In contrast, there are around 600 different evaporative families sold in California which have greater than 80cc engines and involve products other than WBMs. These are typically small volume, evaporative families because the fuel tanks have to be customized to fit into unique and complex configurations. Accordingly, ARB concluded in its ISOR in 2003 that it was not cost-effective to require non-integrated, equipment manufacturers of non-WBMs (many of whom are small businesses)—to either purchase SHEDs or contract for third parties to SHED-test their evaporative-tank families.

In contrast, CARB's administrative record in the current rulemaking fails to provide any technical-feasibility or cost-analysis on the impacts of its dramatically more stringent compliance program. In its ISOR for the current rulemaking, CARB staff over-simplistically indicates that no additional costs will be triggered by this new much more stringent compliance testing responsibility and the associated expanded liability. (See pp. 88-99 of ISOR relevant provisions attached as Exhibit B). CARB Staff also fails to prepare a corresponding cost-effectiveness calculation—in terms of the impacts of the diurnal compliance test provisions—on the apparent grounds that there would not be any additional costs and "there are no direct quantifiable

emissions benefits." (See p. 101 of ISOR attached as Exhibit B). (OPEI, November 17, 2016, letter p. 38-39, 56-83)

The comment also includes an "Exhibit B" which contains reproductions of pages i, x-xii, 41-43, 84-103 of the Staff Report. Various markings including lines, brackets, circles and stars have been drawn on pages x, xi, xii, 41, 42, 91, 94, 96, 97, 98, 100, 101 and 102.

Agency Response: The costs associated with diurnal emission testing are discussed in the responses to Comments Q.3 and Q.4. The number of evaporative families for > 80 cc engines is significantly smaller than OPEI suggests, as discussed in the responses to Comments F.3 – F.5. The proposed amendments do not require additional diurnal emission testing, but costs for voluntary testing are included in the Economic and Fiscal Impact Statement (Form 399) for these amendments, in response to this and other comments. The claim that the proposed amendments make the existing emission standards more stringent is addressed in the responses to Comments K.2, K.3, L.2 and N.8. No additional emission reductions are projected under the proposed amendments because they are intended to increase compliance with existing standards. The emission reductions projected in 2003 when the regulations were adopted may not have been achieved because of a low compliance rate. The proposed amendments will ensure those reductions are achieved.

8.

Comment: III. Executive Summary – Below are the conclusions of my legal analysis below:

- Compliance based on ARB's proposed enforcement tests procedures would make the existing certification-standards dramatically more stringent and therefore would trigger all the procedural requirements that apply to Agency-Rulemaking relative to each significant modification.
- Under the California Administrative Procedures Act (APA), a notice of proposed rulemaking (as well as the statement of reasons accompanying the final rule) must include consideration of the costs and benefits of the proposed regulation and less restrictive alternatives.
- Under the California APA, ARB has failed to prepare the required cost-benefit analysis for the proposed alternative solution proposed by OPEI or the diurnal SHED-compliance provisions proposed by ARB.
- ARB could not legally finalize its proposed more stringent diurnal compliance test procedures— unless these modifications were fully supported by an administrative record, which must document and quantify:
    - All the additional improvements to the regulated components and equipment that would be required to achieve and ensure

full compliance with ARBs staff's proposed diurnal standards and expanded test procedures compared to the alternative proposed by OPEI;
    - The projected costs under ARB staff proposed of both those material improvements and SHED-testing for each manufacturer and the industry compared to the alternative proposed by OPEI;
    - Any benefits of such improvements under both the OPEI and ARB staff proposals;
    - The related cost-benefits of each proposed modification to the existing compliance related test procedures and standards under the OPEI and ARB staff proposals.
- OAL would be legally compelled to disapprove the proposed SHED-based compliance testing and its diurnal standards and expanded test procedures because they are not supported by the administrative record as being cost-effective.
- ARB would be vulnerable to administrative and legal challenges that would result in these problematic provisions being invalidated—because ARB failed to comply with its procedural requirements in contradiction to the precedent summarized below. (OPEI, November 17, 2016, letter p. 39-40)

Agency Response: The claim that the proposed amendments make the existing emission standards more stringent is addressed in the responses to Comments K.2, K.3, L.2 and N.8. The Notice of Proposed Action (45-Day Notice) published on September 27, 2016, included a detailed estimate of the costs of the proposed amendments. This FSOR updates the estimated costs based on comments received in the 45-day comment period and a subsequent 15-day comment period. While a cost-benefit analysis is not required by the APA, ARB did consider alternatives to the proposed amendments, including taking no action, eliminating design certification, and the alternative presented by OPEI and EMA. As detailed in the Staff Report, ARB determined that no alternative would be more effective, or equally effective and less burdensome, than the proposed amendments.

ARB disagrees with OPEI's assessment of the steps required to adopt the proposed regulations. The Economic and Fiscal Impact Statement (Form 399) accounts for the costs of the proposed amendments and meets the requirements of the APA. Although ARB is not required to determine that the proposed amendments are cost-effective, the costs are modest: as detailed in the Economic and Fiscal Impact Statement (Form 399) for these amendments, ARB estimates a maximum average retail price increase of $2.72 per unit as a result of the proposed amendments.

9.

Comment: IV. <u>OAL Disapproval of Invalid Regulations</u> – The Office of Administrative Law (OAL) routinely disapproves regulatory actions that fail to comply with procedures required by California's Section 11356.3 of the

California Administrative Procedures Act (APA). This review is an independent check on the exercise of rulemaking powers by executive branch agencies—to improve the quality of regulations that implement, interpret, and make specific statutory law, and to ensure that the public is provided with a meaningful opportunity to comment on regulations before they become effective. Under these provisions California Agencies must prepare and file a "sufficient" Economic Impact Assessment (EIA) including a cost-benefit analysis. (See Section VI below). OAL must disapprove regulations in situations (like the current proposal)— in which the EIA "only includes a mere statement that there is no effect on all the elements" required by Section 11346.3. (OPEI, November 17, 2016, letter p. 40)

10.

Comment: V. Legal Cases – A. California Cases Finding Violation of APA Procedures – I have closely reviewed relevant precedent of California court decisions applying California's APA Requirements to relevant factual circumstances—where an Agency, Department or Board made a change to the compliance procedures used to generally implement and enforce an existing program. The most "on-point" California decision is Grier vs. Kizer, 219 Cal. App. 3d 422 (1990). (See case attached as Exhibit C). In that case, the California Department of Health Services (the Department) initiated an enforcement action to recoup Medi-Cal payments from a physician pursuant to a formal compliance-audit. The Department claimed that it had internally developed a compliance methodology based on a "random sampling plan." That compliance methodology allowed the Department to extrapolate the results of data-points derived from individual patients from a subset of audited claims— to all claims that had been filed over a broad compliance period. The affected physician argued that the Department's extrapolation-methodology skewed and exaggerated the Department's compliance-determination that there had been an "over payment." The Department responded that it had "sufficient authority" to adopt and "generally apply" its "sampling plan" and extrapolation-methodology—pursuant to its statutory authority to audit Medi-Cal providers in a manner consistent with "standard auditing practices". OAL rejected the argument and determined the compliance methodology was an improper "underground regulation", which should have been adopted pursuant to the APA—because the challenged audit-methodology was a standard of "general application" implementing the Department's statutory authority.

Similar to ARB's stated position in the current proposal, the Department unsuccessfully argued to the court that the regulated entity was not required to do anything differently than the status-quo. Specifically the Department argued that "the provider is not required to do anything differently when the Department uses probability sampling to prove an overpayment", rather than relying on a full scale audit under the status quo. Id. at 437.

The Grier court rejected the Department's arguments and found the Department's "use of probability compliance-sampling might directly cause a

provider to leave the Medi-Cal program to avoid the potential for large recoupments based on probability sampling." Id. The court held that the compliance sample-methodology was a "regulation" under the APA and that it did not fall under the "internal management exception as claimed by the Department." Consequently, the sampling technique was invalid.

In reaching this decision, the Grier court relied on Stoneham v. Rushen, 137 Cal. App.3d 729, (1982). (See case attached as Exhibit D). In Stoneham, the California Director of Corrections issued a bulletin with a new compliance classification and scoring system, which "generally applied" to all inmates and determined the proper level of custody and place of confinement. The Director unsuccessfully argued that "the procedural details contained in the classification system merely implement the statement of policy set forth" as the "status quo" in an existing regulation. The Stoneham Court rejected this argument and held: The adoption of a standardized scoring system to determine an inmate's classification invoked the APA because it was "a rule of general application *significantly affecting* the male prison population" – *even though the new system did not impose any "additional burden on the inmates*."

In reaching its decisions, the Grier and Stoneham courts recognized that: "Unless the agency promulgates a regulation in substantial compliance with the APA, the regulation is without legal effect." See *Armistead v. State Personnel Board* 22 Cal.3d 198, 204 [149 Cal. Rptr. 1, 583 P.2d 744] (1978). Because the Legislature adopted the APA to give interested persons the opportunity to provide input on proposed regulatory action—any doubt as to the applicability of the APA's requirements must be resolved in favor of the APA and the aggrieved plaintiff. (See Armistead at p. 204). (OPEI, November 17, 2016, letter p. 40-42, 84-101)

The comment also includes an "Exhibit C" which is a reproduction of the Court opinion in the Grier v. Kizer case referenced in the comment, and an "Exhibit D" which is a reproduction of the Court opinion in the Stoneham v. Rushen case referenced in the comment.

Agency Response to Comments Q.9 and Q.10: ARB has conducted an Economic and Fiscal Impact Statement (Form 399) for these amendments that meets the requirements of the APA and incorporates revisions based on comments from OPEI and others. The judicial decisions OPEI cites do not hold otherwise. For instance, *Grier v. Kizer* (1990) 219 Cal.App.3d 422, involved an audit procedure that had not been adopted – at all – pursuant to the APA. The Department of Health Services argued the procedure was a regulation because it was a rule of general applicability to parties outside the Department. *Stoneham* and *Armistead* also stand for the proposition that a rule of general applicability must be adopted according to the requirements of the APA. That is what ARB has done. These cases did not address how the economic impacts of a regulation should be assessed.

11.

Comment: B. Federal Cases – In the context of upholding challenges to emission regulations promulgated under Federal Clean Air Act- U.S. courts, including those located in California, have specifically recognized the inter-dependency and required-consistency between a test method used to establish the standard through the required administrative record—and the corresponding methods used for enforcing the standards:

- In Portland Cement Association v. Ruckelshaus, 486 F.2d 375, 396 (D.C. Cir. 1973), cert. denied, 417 U.S. 921 (1974), the court expressed concerns that the methods for sampling in the final EPA rule were different from those used in the tests to establish the standards in the administrative records. The court explained that "a significant difference between techniques used by the agency in arriving at standards, and requirements presently prescribed for determining compliance with standards, raises serious questions about the validity of the standard" [See also Amoco Oil v. EPA, 501 F.2d 722, 743 (D.C. Cir. 1974); Essex Chemical Corp. V. Ruckelshaus, 486 F.2d 427, 436 (D.C. Cir. 1973), cert. denied, 416 U.S. 969 (1974).]. The court remanded the challenged Regulations and required EPA to explain the discrepancy between the test method used to develop the standard and the method used to enforce it. (Id.at 397).
- Courts have relied on this same fundamental principle to reject attempts by EPA to use test methods other than the test method specified to determine compliance, without undertaking rulemaking on the stringency of the standard that would be impacted by a more rigorous compliance testing. See Donner Hanna Coke Corp. V. Costle, 464 F.Supp. 1295, 1304 (W.D.N.Y. 1979).
- In U.S. v. Kaiser Steel, No. CV 82-2623-IH (C.D. Cal. 1984), the court rejected U.S. EPA's attempt to use “non-referenced” test method data for the enforcement purposes of establishing the duration of a violation. (OPEI, November 17, 2016, letter p. 42-43)

Agency Response: OPEI contends that there is a discrepancy between the test methods used to establish the standards, and those used to determine compliance. (Legal Analysis, pp. 6-7.) The cases cited by OPEI are distinguishable. Here, the diurnal emission test is one of the test methods specified in the regulations, and the same test used to determine compliance. It is not a different test, unlike the tests to establish the standards as compared with the tests to determine compliance in *Portland Cement Assoc’n, Donner Hanna Coke Corp., and U.S. v. Kaiser Steel.*

12.

Comment: VI. California’s Administrative Procedures – In 1982, the California legislature adopted Government Code section 11317.5(a), which states;

No state agency shall issue, utilize, enforce, or attempt to enforce any guideline, criterion, bulletin, manual, instruction, order, standard of general application, or other rule, which is a regulation as defined in subdivision (h) of section 11342, unless the guideline, criterion, bulletin, manual, instruction, order, standard of general application or other rule has been adopted as a regulation and filed with the Secretary of State pursuant to this chapter.

This section also provides that if OAL is notified of or learns of the issuance, enforcement or use of any such regulation which has not been properly adopted, it can issue a determination as to whether it is a regulation and make its determination available to the public and the courts.

The initial notice and final statement of reasons for a regulation must contain a description of the problem addressed; an "informative digest" containing an analysis of existing state and federal law and regulations; and analysis of the specific purpose of the regulation and the rationale for the agency's determination that the regulation is reasonably necessary to carry out those purposes. It must identify each technical, theoretical, and empirical study or report on which the agency relies. If there is any change from the originally proposed regulation, the agency must renotice the regulation for an additional comment period of at least fifteen days. The information contained in the initial statement of reasons must be updated in the statement of reasons accompanying the final regulation.

The final regulation must also contain a summary of each objection or recommendation submitted during the comment period and an explanation of how the proposed action was changed to accommodate each objection or recommendation, or the reasons for making no change. No less than forty-five days after publication of the original notice, a public hearing must be held if any interested person requests one. No material can be added to the record after the close of the public hearing or comment period unless there is additional public comment thereon. The statute carefully defines the record, requires the agency to index the record, and apparently makes the record exclusive for judicial review purposes. On judicial review, a regulation may be declared invalid for a substantial failure to comply with procedural requirements; it is also invalid if the agency's determination that the regulation is reasonably necessary to effectuate the purpose of the statute is not supported by substantial evidence in the rulemaking.

In the last several years, the State Legislature adopted additional procedural safeguards under the APA. Government Code section 11346.3, subdivision (c) now requires "[e]ach state agency proposing to adopt, amend, or repeal a major regulation on or after November 1, 2013, shall prepare a standardized regulatory impact analysis in the manner prescribed by the Department of Finance pursuant to Section 11346.36." Subdivision (c) goes on to specify economic impacts that the standard regulatory impact analysis (SRIA) "shall address".

Government Code section 11346.3, subdivision (f) requires "[e]ach state agency... that has prepared a standardized regulatory impact analysis pursuant to subdivision (c), shall submit that analysis to the Department of Finance upon completion." Subdivision (f) goes on to require Finance to provide comments to the rulemaking agency on the agency's analysis and requires the agency to respond to Finance's comments.

Title 1, CCR section 2000, defines a "major regulation" as "any proposed rulemaking action adopting, amending or repealing a regulation subject to review by OAL that will have an economic impact on California business enterprises and individuals in an amount exceeding fifty million dollars ($50,000,000) in any 12-month period between the date the major regulation is estimated to be fully implemented (as estimated by the agency), computed without regard to any offsetting benefits or costs that might result directly or indirectly from that adoption, amendment or repeal" ["Major Regulation" is also defined in Government Code section 11342.548.]. Section 2000 defines "economic impact" for purposes of determining whether a regulation is a "major regulation" as "all costs or benefits (direct, indirect and induced) of the proposed major regulation on business enterprises and individuals located in or doing business in California." (OPEI, November 17, 2016, letter p. 43-45)

Agency Response: ARB has met the requirements of the APA in adopting the proposed amendments. No Standardized Regulatory Impact Analysis was required because the proposed amendments are not a “major regulation” under the law.

13.

Comment: VII. Conclusion – ARB cannot legally increase the stringency of the current “design-based” program through imposing the SHED-based diurnal requirements— without first quantifying and justifying the feasibility and costs of such a fundamental change to the standard-stringency relative to any resulting benefits—and also by comparing those costs and benefits to the effectiveness of the OPEI’s proposed alternative. Given that in the current proposed rulemaking that ARB has concluded that there are “no quantifiable benefits” from its new compliance requirement—it would be impossible for ARB to now demonstrate that the unquantifiable benefits justified the costs that ARB estimated will be $3.5 million per manufacturer to purchase a SHED.
If the Board were to adopt the regulations as proposed with the current deficient administrative record, then OAL (and or a California or federal court) would be legally compelled to disapprove and invalidate the regulations. I am confident such disapproval would occur for the reasons set forth in this memo. Accordingly, it is in ARB’s interest to work now with the affected stakeholders, OAL, and the Department of Finance to fill all the factual and procedural gaps set forth in this memo and develop a supported cost-benefit analysis—<u>before</u> any Board consideration for a final vote of adoption.

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I would welcome the opportunity to discuss these concerns and suggested improvements with counsel for ARB as well as OAL. (OPEI, November 17, 2016, letter p. 45-46)

Agency Response: The amendments do not increase the stringency of design certification. The claim that the proposed amendments make the existing emission standards more stringent is addressed in the responses to Comments K.2, K.3, L.2 and N.8. ARB disagrees that a cost-benefit analysis must be conducted, as discussed in the response to Comment Q.8. The costs associated with diurnal emission testing are discussed in the responses to Comments Q.3 and Q.4. ARB declined to postpone adoption of the proposed amendments. Numerous changes were made to the proposed amendments, and the Economic and Fiscal Impact Statement (Form 399) was updated based on comments from OPEI and others.

14.

Comment: Additionally, the EIAA failed to provide a cost analysis for several revisions included in the certification section. Namely, the EIAA does not account for design changes and testing associated with the inclusion of the provision that carbon canisters must be installed in a way that prevents exposing the carbon to water or liquid fuel, and with the inclusion of fuel line assembly tensile testing. (OPEI, November 17, 2016, letter p. 5)

Agency Response: The requirement that carbon canisters must be installed in a way that prevents exposing the carbon to water or liquid fuel has been effectively included in the existing regulations since their adoption; an evaporative emission control system will not function properly or meet the applicable emission standards if carbon canisters are not installed in this way. In addition, U.S. EPA regulations include this same requirement, and U.S. EPA certification is required to sell SORE in California. For these reasons, SORE sold in California that use carbon canisters already must meet this requirement. The requirement was added for clarification. Since no changes must be made to existing carbon canister installations based on the proposed amendments, no costs were estimated for this requirement.

Fuel line assembly tensile testing according to ANSI/OPEI B.71.10 (2013) was suggested by OPEI. This test is intended to ensure proper assembly of fuel line assemblies in > 80 cc SORE equipment. As the referenced procedure is part of an American National Standard, its adoption by manufacturers selling SORE in California is believed to be universal. Since manufacturers are already conducting this testing, no new costs are expected to be incurred as a result of the proposed amendments.

V. SUMMARY OF COMMENTS RECEIVED DURING THE 15-DAY COMMENT PERIOD AND AGENCY RESPONSE

A. Introductory Comments

1.

Comment: The Truck and Engine Manufacturers Association ("EMA") hereby submits its comments on the California Air Resources Board's ("CARB's") Proposed Amendments to the Evaporative Emission Requirements for Small Off-Road Engines (the "SSI Evaporative Regulation Amendments") 15-Day Changes published on May 23, 2017.

EMA is the trade association that represents the world's leading manufacturers of non-handheld small spark-ignition engines. More specifically, EMA's members are the manufacturers of the engines that CARB regulates directly, or indirectly through their equipment manufacturer customers under the SSI Evaporative Regulation for engines greater than 80 cc. Accordingly, EMA and its members have a direct and significant stake in the regulatory proposal at issue. EMA supports the comments provided by the Outdoor Power Equipment Institute (OPEI) for engines less than or equal to 80 cc not included in EMA's comments, and OPEI's for engines greater than 80 cc that are covered by both organizations. (EMA, June 7, 2017, letter p. 1)

2.

Comment: The Outdoor Power Equipment Institute ("OPEI") respectfully submits these comments to the California Environmental Protection Agency Air Resources Board's ("CARB") May 23, 2017 "Amendments to the Evaporative Emission Requirements for Small Off-Road Engines" 15-day changes.

OPEI is an international trade association representing more than 100 manufacturers and their suppliers of small spark-ignited engines and outdoor power equipment. OPEI members products are ubiquitous in California households, including products such as lawnmowers, garden tractors, utility vehicles, grass trimmers, brush cutters, lawn edgers, chain saws, snow throwers, tillers, leaf blowers and other lawn and garden implements. As manufacturers of small off-road engines ("SORE") and SORE powered equipment, OPEI members will be directly affected by these amendments. In addition, to the extent that concerns are not included here-in, OPEI strongly supports the comments provided by the Truck and Engine Manufacturers Association ("EMA"). (OPEI, June 7, 2017, letter p. 1)

Agency Response to Comments A.1 – A.2: ARB appreciates the commenters' descriptions of the organizations they represent to provide context to the comments.

B. General comments

1.

Comment: I. Overview
EMA supports CARB's objective to align the test fuel utilized for evaporative compliance with the test fuel utilized for exhaust emission compliance. The revisions included in the 15-Day Changes represent a significant improvement over the regulatory package initially presented to the CARB Board on November 17, 2016. Certain issues, however, should be clarified or revised before the final SSI Evaporative Regulation Amendments are approved by the Office of Administrative Law (OAL). (EMA, June 7, 2017, letter p. 1)

2.

Comment: III. Conclusion
EMA and its member companies appreciate the changes made in response to EMA's previous comments. However, it is important that the changes described above are made prior to final approval of the proposed Amendments to the SSI Evaporative Regulation Amendments by OAL. Those changes represent critical improvements to the proposed Amendments. (EMA, June 7, 2017, letter p. 3)

Agency Response to Comments B.1 and B.2: ARB appreciates EMA's participation in the rulemaking process and support for the certification test fuel update. EMA's comments have been addressed in sections C-I below.

3.

Comment: OPEI appreciates CARB staff's engagement with industry throughout the rulemaking process. As a result industry and CARB have found common ground on most issues. However a few major, and a handful of minor concerns remain. The two major concerns – the cost associated with the diurnal performance limits for >80cc applications and the elimination of key flexibility for the <80cc applications – are discussed in greater detail in the following comments. Annex A includes the complete list of OPEI open issues, many of which address the need for harmonization with EPA requirements or additional clarification. OPEI asks CARB to consider our concerns and these remaining issues before finalizing these amendments. (OPEI, June 7, 2017, letter p. 1)

4.

Comment: Conclusion
Industry has been committed to working with CARB throughout this process, meeting with staff on more than a dozen occasions since September 2015 to address SORE compliance concerns. OPEI appreciates staff's efforts and key updates outlined in these recent 15-day Changes.

That said, given the continued absence of a complete cost analysis and of the lingering flaws in the Validation Study, there are several key challenges that remain with the amendments and more time is needed for CARB/Industry collaboration to resolve these outstanding issues.

OPEI continues to recommend that CARB consider: (1) completing an updated Economic Impact Analysis/Assessment; (2) commissioning a new validation study; and (3) reanalyzing the Validation Study and E10 test results versus the SORE evaporative emissions model to properly determine if SORE equipment is meeting California's air quality goals.

In addition to the concerns detailed above, OPEI has provided a short list of comments and concerns with the Regulation Order, Test Procedures and Certification procedures. Many of these items are mainly concerned with the need for harmonization with EPA requirements or necessary clarifications. The list of unresolved issues is included as Annex A.

Please feel free to contact me directly if you have any questions regarding these comments. (OPEI, June 7, 2017, letter p. 5)

Agency Response to Comments B.3 and B.4: ARB appreciates OPEI's participation in the rulemaking process. OPEI's comments have been addressed in sections C-I below.

C. Comments on Certification Procedures and Requirements

1.

Comment: Requirement that >80cc Applications Certify to Diurnal Performance Limits
As outlined in OPEI's November 17, 2016 ARB Board hearing written and oral comments, OPEI is concerned that the >80cc application certification amendments in sections 2753 and 2754, and the compliance amendments in section 2765 significantly change the heavily relied upon "design-based" strategy. Specifically, for responsible manufacturers that choose to continue business in California, the amendments will require that SHED testing is conducted on a variety of applications and configurations to assure compliance with the requirements of section 2753(b); that all >80cc applications be certified to the diurnal emissions standards. However, the cost of SHED testing for the large number of manufacturers and applications that rely on the current "design-based" strategy was unaccounted for in these amendments. (OPEI, June 7, 2017, letter p. 1-2)

Agency Response: ARB believes that this comment is not directed at the process by which the 15-day changes were proposed or at the substance of the 15-day changes. It reiterates comments submitted by OPEI in the 45-day comment period. The concerns are addressed in section IV of this FSOR.

2.

Comment: CARB Document – §2753(b) Certification Requirements & Procedures

CARB Language – "…to the diurnal emission standards in section 2754 or 2757 of this Article must include a determination of the engine or equipment model in the evaporative family that is expected to exhibit the highest diurnal emission rate relative to the applicable diurnal emission standard and detail the criteria used to make that determination."

OPEI Proposed Language Changes – DELETE. Reinstate 2753(b) and 2754(a)-(c) as written in current Regulation Order, with separate "diurnal" and "design based" certification strategies.

Comment / Reason – See OPEI's November 17, 2016 comments "California Environmental Production Agency Air Resources Board's 'Proposed Amendments to the Evaporative Emission Requirements for Small Off-Road Engines" and concerns outlined within these June 7, 2017 comments. (OPEI, June 7, 2017, letter p. 7)

Agency Response: ARB believes that this comment is not directed at the process by which the 15-day changes were proposed or at the substance of the 15-day changes. It reiterates comments submitted by OPEI in the 45-day comment period. See Comment N.1 in section IV of this FSOR.

3.

Comment: CARB Document – §2753(b)(1) Certification Requirements & Procedures

CARB Language – Diurnal emission test results, determined using TP-902;

OPEI Proposed Language Changes – Diurnal emission test results, determined using TP-902. <u>At the discretion of the certificate holder, the holder may choose to test up to 5 units for demonstration of compliance. The highest, not an average, of the provided results must be below the applicable standard (Table 1) or will determine the EMEL for the family if applicable.</u>

Comment / Reason – To align with the proposed 2765 compliance test averaging (below), allow manufacturers to submit certification data for up to 5 units when certifying in accordance with TP-902 (diurnal). (OPEI, June 7, 2017, letter p. 7)

Agency Response: No change was made to section 2753(b)(1) in the 15-day changes. The comment suggests it is intended to be considered together with Comments G.4 and G.5. An applicant may choose to test any number of units for certification under the existing regulations and the

proposed amendments, but any unit tested must not have emissions exceeding the applicable diurnal emission standard. ARB declined to add the requested language because it is not necessary and because ARB also declined to add the language proposed in Comments G.4 and G.5.

4.

Comment: CARB Document – §2753(f) Certification Requirements & Procedures

CARB Language – A Holder whose Executive Order has been suspended or revoked must submit diurnal emission test results, determined using TP-902, for all evaporative families using engines with displacement greater than 80 cc, as described in (b) of this section, according to the following schedule:,,,

OPEI Proposed Language Changes – A Holder whose Executive Order has been ~~suspended or~~ revoked must submit diurnal emission test results, determined using TP-902, for ~~all~~ evaporative families using engines with displacement greater than 80 cc, as described in (b) of this section, according to the following schedule:

Comment / Reason – See OPEI's November 17, 2016 comments "California Environmental Production Agency Air Resources Board's "Proposed Amendments to the Evaporative Emission Requirements for Small Off-Road Engines" (OPEI, June 7, 2017, letter p. 7)

Agency Response: ARB believes that this comment is not directed at the process by which the 15-day changes were proposed or at the substance of the 15-day changes. It reiterates comments submitted by OPEI in the 45-day comment period. See Comments N.6 and N.7 in section IV of this FSOR.

5.

Comment: CARB Document – §2754(a) Diurnal Emissions & Design Standards Table 1

CARB Language – ..on and after the model years indicated.

OPEI Proposed Language Changes – Add 2020 model year implementation dates for all Table 1 categories

Comment / Reason – Given that all model years are included in the table the proposed changes are being imposed without lead-time required to implement any changes required including revised requirements specified in sections (b), (c), (d), and (e). (OPEI, June 7, 2017, letter p. 7)

Agency Response: ARB believes that this comment is not directed at the process by which the 15-day changes were proposed or at the substance of the 15-day changes. It reiterates comments submitted by OPEI in the 45-day comment period. See Comments N.8 and N.9 in section IV of this FSOR.

6.

Comment: CARB Document – §2754(b)(2) Diurnal Emissions & Design Standards

CARB Language – (b) An applicant certifying engines or equipment to comply with the diurnal emission standards under this section shall do the following:

(1) ***

(2) Provide test data in the certification applications…

Comment / Reason – It is unclear why subsection (2), fuel line test data, is (both currently and in the future) required for equipment for which TP-902 SHED test data has been provided as means to demonstrate compliance with diurnal limits as fuel line permeation is part of the total evap emissions captured in TP-902.
This section should be reworded to note that subsection (1) is required for all, and subsection (2) is required for those relying on component EO's to demonstrate compliance with diurnal limits ("design-based").
Additionally, both sections (b) and (c) share the same introductory sentence, which is confusing. Can these sections be combined in some way? (OPEI, June 7, 2017, letter p. 7-8)

Agency Response: ARB believes that this comment is not directed at the process by which the 15-day changes were proposed or at the substance of the 15-day changes. It is partially directed at the substance of the existing regulations adopted in 2003 and partially directed at the substance of the proposed amendments published with the Staff Report. This comment requires only clarification, as provided herein. Section 2754(a)(1) (2754(b)(2) in the proposed amendments) requires submission of fuel line test data for all > 80 cc SORE because of the requirements for model years 2006 and 2007. Footnote 1 to Table 1 in section 2754 details the requirements for fuel line permeation in these model years, when the diurnal emission standards had not been implemented yet. Subsequent to these model years, performance-certified evaporative families are not required to submit fuel line test data for certification because they do conduct diurnal emission testing of the whole engine with an evaporative emission control system. However, the equivalent fuel line provisions in section 2753(c) (2753(d) in the proposed amendments) do require the use of certified fuel lines. Fuel line permeation data or an Executive Order number for a certified fuel line must be submitted for design-certified evaporative families.

Although section 2754(b) and 2754(c) have similar introductory statements, they differ slightly. Section 2754(b) requires an applicant to meet both of its subsections and 2754(c) only requires an applicant to meet one of its subsections.

7.

Comment: CARB Document – §2754(b)(2) Diurnal Emissions & Design Standards

CARB Language – (b)(2) "Provide test data in the certification application showing that all fuel lines meet the permeation requirement of 15 grams of TOG per square meter of surface area of the surface in contract with fuel per day when tested with LEV III Certification Gasoline using test procedure SAE J1737 (Stabilized May 2013), SAE J30, SAE J1527, or, only for fuel lines with inner diameter 4.65mm or less, SAE J2996… The permeation testing must be conducted at 40C or higher…"

OPEI Proposed Language Changes – "…The permeation testing must be conducted at ~~40C~~ 23C or higher…""

Comment / Reason – Harmonization. The test temperature does not align with the current EPA requirements.

Note: This comment was previously provided as footnote (c) of table 2755 in OPEI's November 17, 2016 comments "California Environmental Production Agency Air Resources Board's "Proposed Amendments to the Evaporative Emission Requirements for Small Off-Road Engines" (OPEI, June 7, 2017, letter p. 8)

Agency Response: ARB believes that this comment is not directed at the process by which the 15-day changes were proposed or at the substance of the 15-day changes. It reiterates comments submitted by OPEI in the 45-day comment period. See Comments M.7 and N.15 in section IV of this FSOR.

8.

Comment: II. <u>Proposed Regulation Amendments</u>
The 15-Day Changes to the SSI Evaporative Regulation Amendments raise two required clarifications: (i) fuel tank cap durability; and (ii) canister purge. In addition there are two areas of concern for EMA member companies: (i) reporting requirements; and (ii) compliance testing requirements.

A. Fuel Tank Cap Durability

The 15-Day Changes added a requirement to the Regulation Order that fuel caps must meet the durability requirements specified in TP-902 per §2756(c). It is not clear if this requirement is applicable to all SSI

products covered by the Regulation Order or only those products tested for diurnal emissions per TP-902. Further CP-902 lists information required for submission concerning the fuel cap, but there is no mention of cap durability. Products certified using the design based option require submission of the Executive Order numbers for the fuel tank, fuel line, and canister but nothing regarding the fuel cap. If the fuel cap durability is required for all products covered by the Regulation Order EMA recommends that an item be added to the "Fuel cap information" list in CP-902 that reads: "A statement that the cap complies with the durability requirement specified in TP-902." If the fuel cap durability is only required for diurnal tested products §2756(c) of the Regulation Order should be revised to limit its applicability. (EMA, June 7, 2017, letter p. 1-2)

9.

Comment: CARB Document – §2756(c) Fuel Cap Performance Standard

CARB Language – Fuel cap must meet the durability requirements in TP-902.

OPEI Proposed Language Changes – Fuel cap must meet the durability requirements in TP-902 <u>for equipment relying on the diurnal-based certification strategy in Section 2754. The fuel cap durability requirement is optional for equipment relying on the design-based certification strategy in Section 2754.</u>

<u>OR CHANGE TP-901 Section 8.4</u>
The following test is <u>required for >80cc equipment and optional for <80cc equipment:</u>

Comment / Reason – For equipment certified under the design-based certification option, the requirement conflicts with the language in TP-901 8.4, which indicates the fuel cap installation cycles test is optional. (OPEI, June 7, 2017, letter p. 8)

Agency Response to Comments C.8 and C.9: Section 2756(c) was added as requested by EMA (Comment N.16 in section IV) and OPEI (Comment N.17 in section IV) in their 45-day comments. Section 2756 applies to > 80 cc engines, so ≤ 80 cc engines are not affected by this requirement. Evaporative families for > 80 cc engines do not have to be tested under TP-902 for certification, as design-certification remains an option under the proposed amendments. However, if a manufacturer conducts TP-902 testing for certification, the durability demonstration must be conducted as part of that testing. The durability demonstration of TP-902 does not have to be performed for certification of design-certified evaporative families, but could be performed as part of a compliance test.

ARB increased flexibility for manufacturers by making optional the fuel cap installation cycles in section 8.4 of TP-901. ARB also made sealing fuel tanks with fuel caps during permeation testing optional, per EMA's and OPEI's requests. ARB declined to decrease the flexibility provided to manufacturers in these changes and also declined to modify the requirements of section 2756(c) or CP-902 in response to this comment. ARB believes there is no conflict in the requirements.

D. Comments on the Economic and Fiscal Impact Statement

1.

Comment: The 15-day Changes address neither OPEI's concerns that manufacturers will need to conduct a significant amount of new testing, or the related testing cost. Instead CARB staff's summary of the 15-day Changes includes a brief statement noting a revised, estimated economic impact that fails to account for the considerable costs associated with the compliance testing that OPEI has estimated and provided in the record. Specifically, CARB staff revises downward the preliminary cost estimate of $32.7 million (2016 dollars) over a 5 year period to $21.7 million (2016 dollars), which would amount to a price increase of $2.30 per unit for SORE sold in California. In contrast, OPEI's November 17, 2016 comments explain in detail that the costs associated with 64 manufacturers to install, maintain and operate SHEDs would be up to $224 million dollars. Furthermore, CARB has not considered the additional cost that would be born by manufacturers for third party compliance follow-up testing in the event CARB testing finds a unit exceeds the diurnal standard. These considerable costs are troubling especially in light of the fact that they apply to just 19 percent of the entire SORE population, and that "there are no direct quantifiable emissions reductions" associated with these proposed amendments. Initial Statement of Reasons at 101. (OPEI, June 7, 2017, letter p. 2)

Agency Response: ARB believes that parts of this comment are not directed at the process by which the 15-day changes were proposed or at the substance of the 15-day changes. It is partially directed at the substance of the existing regulations adopted in 2003 and partially directed at the substance of the proposed amendments published with the Staff Report. OPEI's comments regarding certification testing requirements and associated costs are addressed throughout section IV of this FSOR. As discussed in the responses to Comments Q.3, Q.4 and Q.8 in section IV of this FSOR, the Economic and Fiscal Impact Statement (Form 399) for these amendments includes approximately $2.2 million in costs for voluntary diurnal emission testing of previously design-certified evaporative families. ARB estimates a maximum average retail price increase of $2.72 per unit as a result of the proposed amendments.

Costs associated with independent testing after a failure in an initial compliance test are not required by the proposed amendments. The

existing regulations include provisions for this testing, and the costs are not required as they are only incurred after a failure. Follow-up compliance testing is not a cost of complying with the regulations, it is an option in response to noncompliance. It is also a cost of a failure to comply in the first instance, just as penalties are not estimated as "costs" of the regulations. ARB also expects that follow-up compliance testing will be minimal because the amendments are intended to facilitate compliance.

2.

Comment: CARB staff's failure to address the true costs associated with these proposed regulatory changes for the evaporative requirements for the SORE category is a fundamental flaw and a violation of the California Administrative Procedures Act (APA). OPEI's November 17, 2016 comments articulated this concern and provided several California Court of Appeals cases lending support to OPEI's position that a failure of CARB staff to follow the APA will result in the rule being invalidated by the Office of Administrative Law (OAL) or possibly by a court.

In addition to the legal arguments provided in our November 17, 2016 comments, CARB staff must consider a 2013 ruling from the Supreme Court of California in Western States Petroleum Ass'n v. Board of Equalization, 304 P.3d 188 (Cal. 2013), as staff works through the rulemaking process to finalize these amendments. Specifically, in the WSPA case, the California Supreme Court upheld the lower courts' rulings invalidating a tax valuation rule for petroleum refineries on the basis that the regulation was not supported by an adequate economic impact assessment. Importantly, while the California Supreme Court determined that the tax valuation regulation was substantively valid, the lack of an adequate economic impact assessment was a fatal flaw and grounds for overturning the rule because it did not comply with the requirements of California's APA. WSPA at 207. The Court's analysis in the WSPA case is instructive given the parallels between the deficiencies in the economic assessment at issue in the WSPA case and the economic assessment for the SORE evaporative amendments.

Based on the discussion and holding in the WSPA case, OPEI is very concerned that the amendments to the evaporative regulations for the SORE category do not conform to the APA requirements articulated in the California Government Code because the economic impact assessment provided is deficient and fails to address contrary information in the record. As pointed out, the cost analysis in the Initial Statement of Reasons fails to consider the number of companies that will be required to invest millions of dollars in implementing the SHED testing compliance requirements in these recent amendments. (OPEI, June 7, 2017, letter p. 2-3)

3.

Comment: Continuing to ignore the cost information included in the record and relying on highly disputed test results will jeopardize the validity of this rule as CARB moves forward to finalize these amendments. To resolve these concerns, OPEI recommends ARB reinstate today's stand-alone, design-based certification and compliance strategy. (OPEI, June 7, 2017, letter p. 1)

Agency Response to Comments D.2 and D.3: These comments, in part, reiterate comments submitted by OPEI in the 45-day comment period. See Comments Q.1 – Q.14 in section IV of this FSOR and Comment D.1 above.

WSPA is distinguishable. In that case, the Board of Equalization had adopted formulae for valuing realty at petroleum refineries. The California Supreme Court held that the Board of Equalization had not met the requirements of the APA for assessing the economic impacts of the formulae, where it had not explained in the rulemaking why its approach to valuing land was appropriate. (57 Cal.4th at 430.) Here, ARB has explained the facts, projections, and inferences that led to its estimates of the costs of the amendments, and revised its cost estimates in light of the comments received, as *WSPA* endorsed. (57 Cal.4th at 429.) However, nothing cited or in the record requires ARB to consider costs of testing or other activities that are not required by the amendments.

OPEI's proposed resolution to its expressed concerns would not ensure that all > 80 cc SORE meet the diurnal emission standards, so the emission reductions projected in 2003 could not be ensured.

E. Comments on the Test Procedures

1.

Comment: CARB Document – TP-901 §7 Calibration Procedure

CARB Language – The balance listed in section 5(b) shall be calibrated annually using National Institute of Standards and Technology (NIST)-traceable mass standards. The NIST-traceable mass standards shall be calibrated annually by an independent organization.

OPEI Proposed Language Changes – The balance listed in section 5(b) shall be calibrated ~~annually~~ within 370 days of a measurement using National Institute of Standards and Technology (NIST)-traceable mass standards. The NIST-traceable mass standards shall be calibrated ~~annually~~ within 370 days of usage by an independent organization.

Comment / Reason – Harmonize calibration requirements with EPA. (OPEI, June 7, 2017, letter p. 12)

Agency Response: ARB believes that this comment is not directed at the process by which the 15-day changes were proposed or at the substance of

the 15-day changes. It reiterates comments submitted by OPEI in the 45-day comment period. See Comment L.9 in section IV of this FSOR.

2.

Comment: CARB Document – TP-901 §8 Durability Demonstratn

CARB Language – A durability demonstration is required prior to permeation testing. These durability tests are designed to ensure the fuel tank assembly meets the permeation emission standard throughout the useful life of the equipment. A durability demonstration consists of the following tests:

OPEI Proposed Language Changes – A durability demonstration is required prior to permeation testing, <u>if your emission control technology involves surface treatment or other post processing treatments such as epoxy coating. Metal tanks that are not either fully welded or brazed together also require durability testing.</u> These durability tests are designed to ensure the fuel tank assembly meets the permeation emission standard throughout the useful life of the equipment. A durability demonstration consists of the following tests:

Comment / Reason – Harmonize with EPA and provisions of today's fuel tank ATP's with similar provisions. (OPEI, June 7, 2017, letter p. 12)

Agency Response: ARB believes that this comment is not directed at the process by which the 15-day changes were proposed or at the substance of the 15-day changes. It reiterates comments submitted by OPEI in the 45-day comment period. See Comment L.10 in section IV of this FSOR.

3.

Comment: B. Canister Purge
EMA and its members appreciate that CARB is proposing to reinstate the 400 bed volume canister purge in TP-902 §5.2. However, the previously removed canister purge language in §3 has not been reinstated. To ensure there is no confusion regarding the canister purge requirement, EMA recommends the previously stricken language in §3 be reinstated. (EMA, June 7, 2017, letter p. 2)

4.

Comment: CARB Document – TP-902 §3 General Summary of Test Procedures

CARB Language – ~~"Purge carbon canister (if so equipped) with 400 bed volumes of nitrogen or dry air at the canister manufacturer's recommended rate"~~

OPEI Proposed Language Changes – "Purge carbon canister (if so equipped) with 400 bed volumes of nitrogen or dry air at the canister manufacturer's recommended rate"

Comment / Reason – Reinstate 400 bed volume canister purge consistent w/ Figure 1 and §5.2 (OPEI, June 7, 2017, letter p. 12)

Agency Response to Comments E.3 and E.4: ARB believes that these comments are not directed at the process by which the 15-day changes were proposed or at the substance of the 15-day changes. They reiterate comments submitted by EMA in the 45-day comment period. See Comment L.16 in section IV of this FSOR.

5.

Comment: CARB Document – CP-901 §7 CP-902 §6 Application Format Instruction

Comment / Reason – OPEI requests applications templates with examples as part of a separate guidance document to clarify requirements and to ensure consistency across ARB Certification staff. (OPEI, June 7, 2017, letter p. 8)

Agency Response: ARB believes that this comment is not directed at the process by which the 15-day changes were proposed or at the substance of the 15-day changes. Existing certification application templates will be updated as necessary and will be used to collect information required in the proposed amendments.

F. Comments on Reporting

1.

Comment: C. Reporting Requirements:
EMA member companies strongly support the change from sales volume to production volume reporting. However, the newly added requirement that production volume be reported for each equipment type by engine family and fuel tank volume within each evaporative family is overly burdensome and, in many cases not feasible.

CARB has not provided any guidance with respect to how equipment types should be differentiated for reporting purposes. Thus, each Holder may interpret CARB's requirements differently and CARB will be unable to compile any meaningful information through the required reporting.

In addition, engine manufacturers that are the Holder for an evaporative family cannot provide the production volumes by equipment type. In many cases, the same engine with a complete fuel system is utilized by many different equipment manufacturers (OEMs) to power multiple equipment

types. Production volumes of those equipment types constitute OEM's confidential business information and are not available to the engine manufacturer. In addition, complete engines are often sold to small volume OEMs or individuals through distributors and/or dealers. Just like an engine manufacture's relationship with its OEMs, the distributor/dealer relationship with its customer does not provide a means to provide equipment type volume information back to the engine manufacturer.

EMA recommends that the new sentence "Production volume must be provided for each equipment type by engine family and fuel tank volume within each evaporative family" be deleted from the final regulation. (EMA, June 7, 2017, letter p. 2-3)

2.

Comment: CARB Document – §2761
Emission-Related Defect and Sales Reporting Requirements

CARB Language – (f) End-of-Year and Final Production Volume Reports.
(1) A Holder shall submit end-of-year and final production volume reports for all of the Holder's evaporative families. End-of-year and final production volume reports must indicate the production volume for each evaporative family. Production volume must be provided for each equipment type by engine family and fuel tank volume with each evaporative family.

OPEI Proposed Language Changes – (1) A Holder shall submit end-of-year and final production volume reports for all of the Holder's evaporative families. End-of-year and final production volume reports must indicate the production volume for each evaporative family. Production volume must be provided for each equipment type by engine family and fuel tank volume with each evaporative family. If the above data is not reasonably ascertainable, you may provide production volume by fuel tank volume and al list of commonly used equipment expected for the family.

Comment / Reason – For engine manufacturers that provide complete fuel systems installed to general purpose engines, it may not be possible to track what engines are installed to what applications and by what equipment manufacturers due to the common SORE distribution model. (OPEI, June 7, 2017, letter p. 10)

Agency Response to Comments F.1 and F.2: ARB declined to modify the production volume requirements based on these comments. ARB believes the requirements include sufficient flexibility to allow the required reports to be generated for all evaporative families. ARB also believes that Executive Order holders already compile the information required for these reports for other purposes.

The definition of “production volume” in section 2752(a)(22) provides, “A Holder may estimate production volume through market analysis. An educated and consistent estimate with the best available documentation will be acceptable as the final report of production volume in California.” Production volume by equipment type will be helpful information for validating ARB’s emissions inventory and assessing industry trends, and is essential information for SORE manufacturers for their everyday business practices. Many Executive Order holders will have all of the required information readily available because they are also the equipment manufacturers for their evaporative families. Other evaporative families include only one equipment type or include more than one equipment type but use distinguishable configurations for different equipment types. For example, different engine calibrations or fuel tank volumes may be used on different equipment types. When engines with complete evaporative emission control systems that are not installed in equipment are sold to ultimate purchasers, an equipment type would not apply.

Where an engine manufacturer sells identically-configured engines with complete evaporative emission control systems to equipment manufacturers for use in more than one equipment type, the provisions to use market analysis and estimates will enable Executive Order holders to generate the required reports. It is not reasonable that an engine manufacturer would have no estimate of the equipment applications in which its engines are used.

G. Comments on Compliance Testing

1.

Comment: Compliance Testing - Elimination of 95% Confidence “U-Factor” for Component Testing
The amendments eliminated the 95% confidence “U-Factor”, under which components or engines would be deemed in compliance if the “U-Factor” was below 1.1 times the applicable standard. The 15-day Changes modified the language such that an evaporative family will be deemed to have overcome the failure of compliance testing under section 2765(a) if the average of the diurnal emissions from the five engines or equipment units selected for testing does not exceed the applicable standards in sections 2754 and 2757. Unfortunately, the provision applies only to equipment with engines having a displacement greater than 80cc. OPEI remains concerned that no statistical tolerance or variation is permitted for component testing, including <80cc fuel tanks and fuel lines. (OPEI, June 7, 2017, letter p. 3-4)

Agency Response: ARB declined to make the requested changes. While this comment refers to language added in 15-day changes, ARB believes that the overall subject of the comment is not directed at the process by which the 15-day changes were proposed or at the substance of the 15-day changes. The comment echoes EMA’s Comments I.1 and I.4 in section IV of this FSOR. The provision in section 2765(b) for overcoming a failure of

testing in section 2765(a) was provided for > 80 cc engines only because they are subject to diurnal emission standards. In contrast, ≤ 80 cc engines are only subject to emission standards for components; there are no diurnal emission standards for these engines at this time.

Therefore, a distinction is made between diurnal emission testing and component testing in section 2765(b) rather than between > 80 cc and ≤ 80 cc engines. This is based on the certification testing requirements. For fuel lines, fuel tanks, and carbon canisters, five samples must be tested for certification, and all five must meet the applicable standard. For performance-certified evaporative families, diurnal emission testing is conducted on one engine with complete evaporative emission control system for certification. In ARB's initial compliance testing under section 2754(a), one or more engines or five components must be tested, and all must meet the applicable standards. No provision was added for basing a pass/fail determination on the average of the results for component testing under section 2754(b) because such a provision would make compliance testing less stringent than certification testing, which requires all five components to meet the applicable standards. Components must be designed so all selected samples meet the applicable standards in certification testing. Any variation in component emissions or performance due to production variability must not result in components not meeting the applicable standards. The requirements are uniform across certification and compliance testing for components: five samples must be tested and all five must meet the applicable standards.

2.

Comment: The modified language creates two very different schemes for equipment with engines having a displacement greater than 80cc and those with displacements less than 80cc. However, in contravention of the requirements in the California APA, CARB has not articulated a reasonable rationale for differentiating between >80cc and <80cc engines for compliance testing purposes [Government Code § 11346.2(b)(1) requires that the initial statement of reasons must include "[a] statement of the specific purpose of each adoption, amendment, or repeal, the problem the agency intends to address, and the rationale for the determination by the agency that each adoption, amendment, or repeal is reasonably necessary to carry out the purpose and address the problem for which it is proposed."]. Further, this approach is inconsistent with other CARB regulatory schemes using averaging or a certain threshold percentage of overall compliant engines or vehicles as sufficient for purposes of demonstrating compliance with applicable emission standards. (OPEI, June 7, 2017, letter p. 4)

Agency Response: OPEI contends that in the Staff Report for the proposed amendments, ARB did not explain its reasons for differentiating between > 80 cc engines and ≤ 80 cc engines for compliance testing, in section 2765(a)(8). As explained in the response to Comment G.1, the required testing depends on whether the emission standards apply to

components or engines with complete evaporative emission control systems. The Staff Report, at pages 41-42, explains the reasons for removing the 95 percent confidence interval test (U-factor). The 15-day changes that are the subject of this comment and portions of Comment G.1 add a provision for considering the average of diurnal emission test results. The reasons for adding this provision specifically for diurnal emission testing are provided in the response to Comment G.1. The Administrative Procedure Act does not require advance explanation of 15-Day changes, like these, that are related to the original proposed amendments to the provisions for compliance testing.

OPEI reiterates EMA's request to retain the U-factor that was proposed for deletion in the 45-day language, in part because OPEI believes it is conceptually consistent with other ARB regulatory programs. ARB declined to accept this request for the reasons discussed in the response to Comment G.1. No law requires perfect symmetry across all of ARB's regulatory programs. It is appropriate for ARB to tailor its regulations to reflect the variances across different kinds of emission sources.

3.

Comment: The elimination of the "U" factor further removes flexibility for the equipment containing engines below 80cc displacement. In the 2003 Final Statement of Reasons, CARB explained that the "U" factor was established because CARB had not conducted testing to determine the feasibility of the proposed emission limits [California Air Resources Board, PUBLIC HEARING TO CONSIDER THE ADOPTION OF EXHAUST AND EVAPORATIVE EMISSION CONTROL REQUIREMENTS FOR SMALL OFF -ROAD EQUIPMENT AND ENGINES LESS THAN OREQUAL TO 19 KILOWATTS, "Revised" Final Statement of Reasons, August 2004, at 38.]. Thus, CARB offered manufacturers compliance flexibility, and allowed for test-by-test and product-by-product variability, through the compliance testing scheme. By eliminating the "U" factor and not allowing averaging, CARB has not accounted for testing or product variability by requiring all five tested components to meet applicable standards. Furthermore, CARB has not tested any individual components to justify a change to the current certification compliance scheme.

In the absence of new and additional component test data, OPEI recommends that CARB reinstate the 1.1 "U-Factor" for both CARB compliance determination and manufacturer follow-up testing for components, including fuel tanks and fuel lines for <80cc applications. Doing so would account for normal variability and provide manufacturers with necessary compliance flexibility. Such an approach also would be consistent with other CARB regulatory programs where confidence factors or averaging is permitted to demonstrate compliance. For example, section 2864(a), Compliance Test Procedure for the 2016 evaporative emission controls of Spark-Ignition Marine Watercraft includes the identical 1.1 times applicable standard "U-Factor" for component compliance determination.

For Spark-Ignition Marine Engines, CARB has implemented a similar mechanism in 13 CCR section 2446 where compliance is based on averaging. This type of compliance demonstration also is used for light-duty vehicles under 13 CCR section 1976(c) and the "California Evaporative Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles," incorporated therein. (OPEI, June 7, 2017, letter p. 4-5)

Agency Response: Elimination of the U-factor is discussed in the responses to Comments G.1 and G.2. The August 2004 revised FSOR for the adoption of the existing SORE evaporative emission regulations does not state, as OPEI suggests, that "CARB had not conducted testing to determine the feasibility of the proposed emission limits." The Agency Response to Comment 49 in that revised FSOR does state that "ARB was limited in the amount of testing it could perform to demonstrate technical feasibility of the proposed standards." ARB did conduct testing and determined that the proposed standards were technically feasible. The response to Comment 49 in the August 2004 revised FSOR also indicates that the U-factor was included to allow relaxed phase-in of new evaporative families.

Since the adoption of the existing regulations in 2003, over 300 components have been certified with ARB, and the certification data invariably indicate that all five samples of a component meet the applicable standards. The certification data demonstrate that component manufacturers ensure that any variability does not result in components not meeting the applicable standards. Symmetry with other ARB regulatory programs is discussed in the response to Comment G.2. Also, the spark-ignition marine watercraft evaporative emissions regulations include some provisions similar to those in the 2003 SORE regulations and were adopted before this present rulemaking began. The spark-ignition marine watercraft regulations will be implemented in model year 2018 and may be the subject of future amendments, but are not addressed in these proposed amendments. The spark-ignition marine engine regulations OPEI references are for exhaust emissions, and do not include design certification, so they are irrelevant to SORE component testing. The light-duty vehicle regulations also do not include design certification and are irrelevant to SORE component testing.

4.

Comment: CARB Document – §2765(a)(1) New Equipment Compliance Testing

CARB Language – The Executive Officer may order Holder to make available for compliance testing and/or inspection five or more fuel lines, carbon canisters, or fuel tanks, or one or more engines or equipment units with complete evaporative emission control systems...

OPEI Proposed Language Changes – The Executive Officer may order Holder to make available for compliance testing and/or inspection five or

more fuel lines, carbon canisters, or fuel tanks, or one or more engines or equipment units with complete evaporative emission control systems. The number of engines or equipment units to be tested shall be based upon the number of test results provided by the Holder in their application for certification. In the event a holder relies on the design-based certification option, and ARB chooses to determine compliance through diurnal SHED testing, the minimum number of engines or equipment units to be tested shall be based on the minimum number of components (five) required to be tested as part of the design based strategy.

Comment / Reason – Align the number of compliance tests with the number of tests required for certification. The proposal is intended to be in conjunction with 2753(b)(1) above, permitting additional certification units for the diurnal certification procedure, and the averaging proposal included in 2765(a)(8). This proposal is not intended to stand alone. (OPEI, June 7, 2017, letter p. 10)

Agency Response: This comment proposes an addition of language to the existing regulations, or possibly the proposed amendments as published with the Staff Report, rather than commenting on the 15-day changes. ARB declined to make the requested changes. This proposal would require a different number of units to be tested in ARB's initial testing for different evaporative families, and would require ARB to do the most diurnal emission testing (five units) for those families that had performed no diurnal emission testing for certification (design-certified families). ARB found no merit in this approach, as also explained in the responses to Comments C.3 and G.5.

5.

Comment: CARB Document – §2765(a)(8) New Equipment Compliance Testing

CARB Language – (8) An evaporative family will be deemed to have passed the compliance testing if the diurnal emissions from all tested engines or equipment units are below the applicable diurnal emission standard in section 2754 or 2757, or the EMEL, if applicable. If any engine or equipment unit has diurnal emissions above the applicable diurnal emission standard in section 2754 or 2757, or the EMEL, if applicable, the evaporative family will be deemed to have failed compliance testing.

The fuel lines, carbon canisters, or fuel tanks certified under an Executive Order will be deemed to have passed the compliance testing if all tested samples meet the applicable design standard in section 2754, 2755, or 2757. The fuel lines, carbon canister, or fuel tanks certified under an Executive Order will be deemed to have failed compliance testing if any fuel line, carbon canister, or fuel tank does not meet the applicable design standards in section 2754, 2755, or 2757.

OPEI Proposed Language Changes – An evaporative family will be deemed to have passed the compliance testing if the average diurnal emissions from all tested engines or equipment units ~~are below~~ do not exceed the applicable diurnal emission standard in section 2754 or 2757, or the EMEL, if applicable, by more than ten percent. Engines or equipment units certified to the design-based option will have the minimum sample size of five and engine or equipment units certified by the diurnal-based option will have an equal number of units tested as the number of test results provided for certification. If the average of ~~-~~any engine or equipment unit has diurnal emissions more than ten percent above the applicable diurnal emission standard in section 2754 or 2757, or the EMEL, if applicable, the evaporative family will be deemed to have failed compliance testing.

The fuel lines, carbon canisters, or fuel tanks certified under an Executive Order will be deemed to have passed the compliance testing if the average all tested samples ~~meet~~ do not exceed the applicable design standard in section 2754, 2755, or 2757 by more than ten percent. The fuel lines, carbon canister, or fuel tanks certified under an Executive Order will be deemed to have failed compliance testing if the average all tested ~~any~~ fuel line, carbon canister, or fuel tank ~~does not meet~~ exceed the applicable design standards in section 2754, 2755, or 2757 by more than ten percent. (OPEI, June 7, 2017, letter p. 10-11)

Agency Response: OPEI suggests in Comment C.3 that Comments C.3, G.4 and G.5 are intended to be considered together. This comment would allow average emissions to be up to 10 percent above the applicable standard before failure, whereas the changes in Comment G.7 would require average emissions to be at or below the applicable standard. The suggested changes are also inconsistent with ARB's goal of enabling more effective enforcement of the existing emission standards, discussed in the Staff Report. Accordingly, ARB declined to make the requested changes.

6.

Comment: D. Compliance Testing Requirements
EMA and its members greatly appreciate the addition of a means to test engines or equipment to overcome compliance test failures under CARB's single unit test. However, the requirement for "independent testing" of those additional engines or equipment raises concern. As CARB Staff reported on many occasions, the proposed regulatory changes are intended to increase compliance with diurnal emission standards. While the design-based approach to certify engines or equipment has been retained, the compliance determination based on diurnal testing has sent a clear message to the regulated industry that engine and equipment manufacturers need to have diurnal emission testing capability. Historically, many engine and equipment manufacturers have elected not to install and operate diurnal emission testing facilities because of the significant expense involved. If a manufacturer does invest in diurnal testing facilities, and those facilities meet all the regulatory requirements required for certification

testing, those facilities also should be acceptable for compliance testing. Any concerns regarding a laboratory's equipment or capability to conduct a valid test can be addressed through inspection or audit of the facilities. If there is a concern associated with laboratories outside of the U.S. that cannot be audited, acceptable laboratories should be limited by location (in the U.S.), rather than be required to be independent.

EMA recommends that the newly proposed language that reads "….selected by the Executive Officer for independent testing under this subsection…" be revised to read "….selected by the Executive Officer for testing under this subsection…". If necessary, the provision also could require that "The test facility utilized must be accessible for inspection per §2769." (EMA, June 7, 2017, letter p. 3)

7.

Comment: CARB Document – §2765(b) New Equipment Compliance Testing

CARB Language – "…An evaporative family will be deemed to have overcome the failure of compliance testing under subsection (a)(8) or (a)(9) of this section 2765 and to have passed compliance testing if the average of the diurnal emissions from the five engines or equipment units selected by the Executive Officer for independent testing under this subsection (b) does not exceed the applicable diurnal emission standard in section 2754 or 2757, or the EMEL, if applicable. The fuel lines, carbon canisters, or fuel tanks certified under an Executive Order will be deemed to have overcome the failure of compliance testing under subsection (a)(8) or (a)(9) of this section 2765 and to have passed compliance testing if the five fuel lines, carbon canisters, or fuel tanks selected by the Executive Officer for independent testing under this subsection (b) meet the applicable design standard in section 2754, 2755, or 2757. The Executive Officer may request the engines, equipment units, fuel lines, carbon canisters, or fuel tanks selected by the Executive Officer for independent testing under this subsection (b) be delivered to an ARB facility for additional inspection or testing."

OPEI Proposed Language Changes – "…An evaporative family will be deemed to have overcome the failure of compliance testing under subsection (a)(8) or (a)(9) of this section 2765 and to have passed compliance testing if the average of the diurnal emissions from the five engines or equipment units selected by the Executive Officer ~~for independent testing~~ under this subsection (b) does not exceed the applicable diurnal emission standard in section 2754 or 2757, or the EMEL, if applicable. The fuel lines, carbon canisters, or fuel tanks certified under an Executive Order will be deemed to have overcome the failure of compliance testing under subsection (a)(8) or (a)(9) of this section 2765 and to have passed compliance testing if the <u>average of</u> five fuel lines, carbon canisters, or fuel tanks selected by the Executive Officer ~~for independent testing~~ under

this subsection (b) meet the applicable design standard in section 2754, 2755, or 2757. The Executive Officer may request the engines, equipment units, fuel lines, carbon canisters, or fuel tanks selected by the Executive Officer for independent testing under this subsection (b) be delivered to an ARB facility for additional inspection or testing."

Comment / Reason – There are currently an insufficient number of labs to conduct follow-up compliance testing. ARB has not quantified cost of additional independent SHEDs that would be required to support compliance testing or testing costs if ARB is not conducting the testing or willing to accept manufacturer SHED test data. Therefore, ARB should conduct additional testing, or test results should be accepted from manufacturer-owned labs as long as compliance with the SHED specifications and calibration requirements in Section 4 of the amended TP-902, or weight calibration requirements in Section 7 of the amended TP-901 can be demonstrated.
Furthermore, components should be allocated the same averaging flexibility when conducting follow-up testing as complete units. As recognized in ARB's 2004 FSOR (Comment 49), resource constraints limited the amount of (component) testing to demonstrate feasibility of the standards, therefore ARB established "U-factors". In the absence of additional component data, OPEI requests the 1.1 times U-factor is reinstated for components, or averaging of the test results to demonstrate compliance is permitted (same as diurnal tested equipment). (OPEI, June 7, 2017, letter p. 11-12)

Agency Response to Comments G.6 and G.7: While Comment G.7 proposes a change to language added in 15-day changes, ARB believes that the overall subject of these comments is not directed at the process by which the proposed amendments were adopted or at the substance of the proposed amendments. ARB declined to make the requested changes. Testing conducted under section 2765(b) after a failure in ARB's initial testing under 2765(a) is required in the existing regulations to be conducted by a laboratory independent of the Executive Order holder. The pertinent sentence in the existing regulations reads, "The Holder of the Executive Order of Certification shall have 30 calendar days in which to notify the Executive Officer of their intent to provide additional information and/or independent test results for five tanks, engines, or equipment that document compliance of the evaporative family." The proposed amendments published with the Staff Report require that the units for this testing be selected by the Executive Officer. EMA commented on this sentence (see Comment I.5 in section IV of this FSOR).

The 15-day changes did not modify the requirement for this testing to be independent, but did add clarification requested by EMA and OPEI regarding overcoming a failure in testing conducted under 2765(a) (see Comments I.1 – I.4 in section IV of this FSOR). Discussion in these comments regarding whether the testing should be independent is irrelevant to the proposed amendments. EMA's and OPEI's suggestion to remove

mention of independent testing from the language added in 15-day changes would not affect the existing requirement for the testing to be independent.

OPEI does not provide a basis for its claim that "there are currently an insufficient number of labs to conduct follow-up compliance testing." It is unclear what number of evaporative families OPEI assumes will fail initial compliance testing under the proposed amendments and subsequently be tested under section 2765(b). This is irrelevant, moreover, for three reasons. Foremost, follow-up compliance testing is caused by a failure to comply with the regulations in the first instance, and not by requirement in the regulations in the first instance. For similar reasons, penalties are not estimated as "costs" of the regulations. Two, the requirement for the testing to be independent exists in the regulations adopted in 2003. This testing is not a new provision in the amendments. ARB declined to estimate costs for this testing because the requirement is in the existing regulations and because the proposed amendments are intended to result in all > 80 cc evaporative families complying with the diurnal emission standards. Three, follow-up compliance testing is expected to be minimal. The amendments are intended to facilitate compliance. The independent laboratories already in existence are expected to be able to meet the demand for follow-up testing, as explained in response to Comments Q.3 and Q.4 in section IV of this FSOR.

ARB also declined to base a determination on the average of the results for component testing, as discussed in the responses to Comments G.1 – G.5.

H. Comments on the Validation Studies

1.

Comment: Additionally, OPEI remains concerned that underlying rulemaking data does not support the need for such stringent and costly amendments. As noted in our November 17, 2016 comments, the Validation Study data cannot be relied on as evidence of systemic issues with SORE compliance. Nor does it support CARB staff's conclusions that: (1) "more often than not, design-certified evaporative families do not comply with the diurnal emission standards"; (2) "the compliance rate of SORE with diurnal emission standards has been low since 2008 and has not improved significantly"; (3) "changes to the certification and compliance testing procedures need to be made to ensure all engines with displacement greater than 80 cc comply with the diurnal emission standards and allow CARB to take enforcement action when necessary"; or (4) "disparity between applicant-submitted certification data and CARB's data" is an indication that SORE sold to consumers do not consistently have the same diurnal emission as units tested for certification' [California Air Resources Board, PUBLIC HEARING TO CONSIDER THE ADOPTION OF EXHAUST AND EVAPORATIVE EMISSION CONTROL REQUIREMENTS FOR SMALL OFF -ROAD EQUIPMENT AND ENGINES LESS THAN OREQUAL TO 19 KILOWATTS, "Revised" Final Statement of Reasons, August 2004,

at 38.]. For these reasons, the Executive Officer cannot reasonably rely on results of the Validation Study to conclude the design-based certification is not working to meet California's overall air quality goals. (OPEI, June 7, 2017, letter p. 3)

Agency Response: ARB believes that this comment is not directed at the process by which the 15-day changes were proposed or at the substance of the 15-day changes. It reiterates comments submitted by OPEI in the 45-day comment period. See Comment G.24 in section IV of this FSOR.

I. Comments on Labeling

1.

Comment: CARB Document – §2759(c) Equipment and Component Labeling

CARB Language – (c) Complete Evaporative Emission Control System Certification Label Content and Location….

OPEI Proposed Language Changes – Add a new paragraph "2759 (c)(5)" using modified language from EPA 1060.137(b)(5)ii)

> (c)(5) Equipment manufacturers that also certify their engines with respect to exhaust emissions may use the same emission family name for both exhaust and evaporative emissions. If you use the provisions of this paragraph (c)(5) you must identify all the certified fuel-system components and the associated component codes in your engine's application for certification. In this case the label specified in this paragraph (5) may omit the information related to specific fuel-system components.

Comment / Reason – Need provision that states integrated engine/equipment need not include both exhaust and evap families due to size constraints.

Considering the provision that the engine/equipment family name may be the same, ARB staff advised that the label could identify "EXH/EVAP". Unfortunately this is not harmonized with EPA. For some <80cc applications, the EPA exhaust and evap family names are not the same. However due to the integrated nature of the product, EPA does not require the evaporative family name on the label. Therefore using "EXH/EVAP" on an EPA + ARB label would be misleading as to the EPA EVAP family name. (OPEI, June 7, 2017, letter p. 9)

Agency Response: ARB believes that this comment is not directed at the process by which the 15-day changes were proposed or at the substance of the 15-day changes. It reiterates comments submitted by OPEI in the 45-day comment period. See Comment O.2 in section IV of this FSOR. ARB

declined to make the requested change as it is unnecessary. ARB does not set U.S. EPA labeling requirements, but does allow for labels to state compliance with both ARB and U.S. EPA regulations. Section 2759(i) provides for approval of alternate labeling, if it is necessary.

2.

Comment: CARB Document – §2759 Equipment and Component Labeling (continued)

CARB Language – d) Evaporative Emission Control Component Certification Label Content and Location.

(1) Fuel lines, fuel tanks & carbon canisters certified to the evaporative emission standards in this Article shall be clearly labeled or marked by a permanent identification showing the Holder's name, the EO number, and model or part number.

(2) ***

(3) The Holder's three-character manufacturer code assigned by U.S. EPA may be used in place of the Holder's name if the manufacturer code is declared in the certification application. If only one model or part number is certified under the applicable EO, the model or part number may be omitted from the label information.

OPEI Proposed Language Changes – Use 1060.137 (slightly modified) as an alternate in a new paragraph (d)(4)

(4) Except as specified in paragraph (d) of this section, you may create the label specified in paragraph with the EO approval (b) of this section as follows:
(1) Include your corporate name.
(2) Include EPA's standardized designation for the family.
(3) State: "EPA COMPLIANT".
(4) Fuel tank labels must identify the FEL, if applicable.
(5) Fuel line labels must identify the applicable perm level. This may involve any of the following:
(i) Identify the applicable numerical emission standard (such as 15 g/m2/day).
(ii) Identify the applicable emission standards using EPA classifications (such as EPA NRFL).
(iii) Identify the applicable industry standard specification (such as SAE J30 R12).
(6) Fuel line labels must be continuous, with no more than 12 inches before repeating. Labels will be continuous if the space between repeating segments is no longer than that of the repeated information.

(e) You may create an abbreviated label for your components. Such a label may rely on codes to identify the component. The code must at a minimum identify the cert status, your corporate name, and the emission family. For example, XYZ Manufacturing may label its fuel lines as “EPA-XYZ-A15” to designate that their “A15” family was certified to meet EPA's 15 g/m2/day standard. If you do this, you must describe the abbreviated label in your application for certification and identify all the associated information specified in paragraph (c) of this section

Comment / Reason – (4) Optionally, you may meet the requirements of 1060.137, including deviations such as abbreviations.
EPA does not require EO number. This creates non-harmonization issues w/ EPA. Need option / alternatively to use EPA 1060.137? Include “these requirements also do not apply for… in 1060.135”?
Additionally provision (i) in which the Exec Officer may waive content requirements if information is provided in owners manual is not a practical solution for most manufacturers due to the difficulties of keeping owners manuals updated as suppliers change and EO numbers changes every four years.
Finally, the requirement itself creates unnecessary burdens for tracking production and service parts based on EO numbers that will change every four years.
For these reasons OPEI requests component labelling requirements be harmonized with EPA’s. (OPEI, June 7, 2017, letter p. 9-10)

Agency Response: ARB believes that this comment is not directed at the process by which the 15-day changes were proposed or at the substance of the 15-day changes. It reiterates comments submitted by OPEI in the 45-day comment period. See Comment O.3 in section IV of this FSOR. ARB declined to make the requested change as it is unnecessary. Section 2759(i) provides for approval of alternate labeling, if it is necessary. Although this approval may be conditioned upon providing such information in the owner’s manual, other means may be used to satisfy the labeling requirements of the regulations. ARB does not believe any evaporative families will be unable to comply with labeling requirements in section 2759, and OPEI has provided no examples of evaporative families that would be unable to comply with the requirements. OPEI’s comments simply speculate on possible problems which can be readily resolved within the requirements and provisions of section 2759.

VI. PEER REVIEW

Health and Safety Code Section 57004 sets forth requirements for peer review of identified portions of rulemakings proposed by entities within the California Environmental Protection Agency, including ARB. Specifically, the scientific basis or scientific portion of a proposed rule may be subject to this peer review process. These amendments do not establish new requirements with a scientific basis subject to peer review.