

October 6, 2008

MEMORANDUM FOR: Administrative Record

FROM: Joan Glickman  
Biomass Program

Kevin Stork  
Vehicle Technologies Program

SUBJECT: Satisfaction of Requirements under the Department of Energy (DOE) Information Quality Guidelines and the Office of Management and Budget (OMB) Peer Review Bulletin for the Studies on the Effects of Intermediate Ethanol Blends on Vehicles and other Engines.

### Background

On October 7, 2002, DOE issued final guidelines setting forth the policy and procedures to ensure and maximize the quality, utility, objectivity, and integrity of the information that DOE disseminates to members of the public. (67 FR 62446; DOE Information Quality Guidelines.) The DOE Information Quality Guidelines were published pursuant to OMB government-wide guidelines under section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001 (Pub. L. No. 106-554), which were published at 67 FR 8452 (February 22, 2002). On December 16, 2004, OMB issued a Final Information Quality Bulletin for Peer Review (Peer Review Bulletin) establishing minimum peer review standards, a transparent process for public disclosure of peer review planning, and opportunities for public participation. (published on January 14, 2005, 70 FR 2664). The Peer review Bulletin is intended to enhance the quality and credibility of the Federal government's scientific information, and applies to influential scientific information disseminated on or after June 16, 2005.

DOE is funding the National Renewable Energy Laboratory (NREL) and the Oak Ridge National Laboratory (ORNL), among others to conduct a series of studies on the effects of intermediate ethanol blends on vehicles and other engines (Intermediate Blends Studies). As data becomes available from each of these studies, NREL and ORNL will publish a Technical Memoranda. Once all of the studies are completed, either DOE or the national laboratories will issue a final report. The technical memoranda will be disseminated by DOE as well as the national laboratories for the purpose of the DOE Information Quality Guidelines.<sup>1</sup> Further, the Intermediate Blends Studies are subject to the Peer Review Bulletin because they constitute "influential" "scientific information" as those terms are defined in the Peer Review Bulletin.<sup>2</sup>

---

<sup>1</sup> The DOE Information Quality Guidelines define "dissemination" to mean agency initiated or sponsored distribution of information to the public. (67 FR 62451.)

<sup>2</sup> The Peer Review Bulletin defines "scientific information" as "factual inputs, data, models, analyses, technical information, or scientific assessments." Scientific assessments are defined as "an evaluation of a body of scientific

The study that DOE, NREL, and ORNL is currently finalizing, “Effects of Intermediate Ethanol Blends on Legacy Vehicles and Small Non-Road Engines, Report 1”, meets the basic level of quality as directed under the DOE Information Quality Guidelines. Further, we conclude that the peer review of this study satisfies the requirements for peer review contained in the Peer Review Bulletin (sec. II.1.). The peer reviewers were chosen based on their expertise with the subject of the study, and were fairly representative of the scientific and technical fields relevant to intermediate ethanol blends and vehicles and engines. The peer reviewers were given an appropriate charge for their review. The peer reviewers were appropriately evaluated for potential conflicts, and none of the peer reviewers participated in the development of the study. We have thoroughly considered and, as appropriate, incorporated the review comments provided as part of the peer review reports into the final study.

#### Determination – Basic Level of Quality

We have considered the requirement to ensure a basic level of quality under the DOE Information Quality Guidelines. A basic level of quality is measured by the utility, objectivity, and integrity of “Effects of Intermediate Ethanol Blends on Legacy Vehicles and Small Non-Road Engines, Report 1” (67 FR 62452.)

*Utility* means the usefulness of information to its intended users, including the public. (67 FR 62451.)

The first report provides the results available to date from the first stages of the larger intermediate ethanol blends test program. The purpose of this initial study was to quickly investigate the effect of adding up to 20% ethanol to gasoline on the following:

- Regulated tailpipe emissions for 13 popular late model vehicles on a drive cycle similar to real world driving and 28 small non road engines under certification or typical in-use procedures.<sup>3</sup>
- Exhaust and catalyst temperatures of the same vehicles under more severe conditions.
- Temperature of key engine components of the same small non road engines under certification or typical in-use conditions.
- Observable operational issues with either the vehicles or small non road engines during the course of testing.

We have determined that this information may be useful in the future development of intermediate ethanol blends policies.

---

or technical knowledge, which typically synthesizes multiple factual inputs, data, models, assumptions, and/or applies best professional judgment to bridge uncertainties in the available information.” Under the Peer Review Bulletin scientific information is “influential if it has “a clear and substantial impact on important public policies or private sector decisions.” (Peer review Bulletin, Section I.) The testing on which the Intermediate Blends Studies is based may be considered “scientific assessments” and the associated analyses may be considered “technical information.” If the Intermediate Blends Studies were to be used in the development of future DOE policies, they would likely be considered “influential scientific information.” We conclude this information is not “highly influential” because it will not have an impact of more than \$500 million in any year, and is not is novel, controversial, or precedent-setting.

<sup>3</sup> Ten different equipment models were tested, with multiple copies tested in some cases for a total of 28 engines.

*Objectivity* means the information is presented in an accurate, clear, complete, reliable, and unbiased manner (67 FR 62451.) As directed by the DOE Information Quality Guidelines, the report “Effects of Intermediate Ethanol Blends on Legacy Vehicles and Small Non-Road Engines, Report 1” identifies the sources of supporting data and analyses to enable the public to assess the objectivity of the sources.

*Integrity* means that the information has been secured and protected from unauthorized access or revision, to ensure that the information is not compromised through corruption or falsification. Consistent with the integrity element, DOE intends to post a link to the “Effects of Intermediate Ethanol Blends on Legacy Vehicles and Small Non-Road Engines, Report 1” on the DOE website so that the final version is readily accessible to the public, while being protected from corruption by the existing DOE website safeguards. Given that the reports will be issued by NREL and ORNL, they will be posted on their web sites.

Based on the above, we have determined that the “Effects of Intermediate Ethanol Blends on Legacy Vehicles and Small Non-Road Engines, Report 1” is of the basic level of quality as set forth in the DOE Information Quality Guidelines.

#### Determination – Adequate Peer Review

We have determined that the “Effects of Intermediate Ethanol Blends on Legacy Vehicles and Small Non-Road Engines, Report 1” has been subject to adequate peer review as directed under the OMB Peer Review Bulletin. This conclusion is based on the factors listed by the OMB Peer Review Bulletin (sec. II.) for determining the adequacy of peer review: (1) charge to reviewers (2) selection of reviewers; (3) choice of peer review mechanism; and (4) transparency.

#### Description and Adequacy of Peer Review

##### *Charge to reviewers*

Reviewers were charged with reviewing the scientific and technical matters related to “Effects of Intermediate Ethanol Blends on Legacy Vehicles and Small Non-Road Engines, Report 1”.

##### *Selection of reviewers*

Reviewers were selected based on expertise, experience, and skills, applicable to intermediate ethanol blends and vehicles and engines. All of the reviewers have extensive experience in industry and/or academia with specific expertise on the topics addressed in this report. Specifically, three are retirees from GM R&D, Exxon Mobil, and Southwest Research Institute. The final reviewer is with Southern Methodist University.

Conflicts. Three of the reviewers are retired and not involved with the study. The final reviewer is at a University and not affiliated with the study.

Independence. None of the reviewers participated in the development of “Effects of Intermediate Ethanol Blends on Legacy Vehicles and Small Non-Road Engines, Report 1”.

*Choice of peer review mechanism*

“Effects of Intermediate Ethanol Blends on Legacy Vehicles and Small Non-Road Engines, Report 1” has been peer reviewed through a panel of experts, led by Joseph Colucci, one of the four panelists. This mechanism for peer review is appropriate for “Effects of Intermediate Ethanol Blends on Legacy Vehicles and Small Non-Road Engines, Report 1”. The method of generating the underlying data and the analyses applied to that data are not novel nor are they complex. Further, we have not identified any specific decision making process that will rely on “Effects of Intermediate Ethanol Blends on Legacy Vehicles and Small Non-Road Engines, Report 1”.

*Transparency*

The reviewers were instructed to prepare an individual report describing the nature of their review and their findings and conclusions. A summary of the reviewers’ comments as well as the DOE/Laboratory resolution of these comments is available.

## Attachment

### **Announcement of a Plan for the Peer Review of Studies on the Effects of Intermediate Ethanol Blends on Vehicles and Other Engines**

Pursuant to Section V of the “Information Quality Bulletin for Peer Review” of the Office of Management and Budget (OMB), under the authority of the Information Quality Act of 2000 (P.L. 106-554), the U.S. DOE’s Biomass and Vehicle Technologies Programs, within the Office of Energy Efficiency and Renewable Energy, announce a plan for the peer review of a series of reports summarizing the findings of a variety of intermediate ethanol blends studies.

The first report, which will summarize findings from the first phase of testing of intermediate ethanol blends on vehicles and other engines, is scheduled for peer review in August 2008 with public release expected in October 2008. DOE selected a chair for the peer review panel with the other three panelists identified by that chair. Follow-up reports will be prepared as additional studies are completed and data become available. The reports, prepared by teams of experts at the National Renewable Energy Laboratory and Oak Ridge National Laboratory, will be issued by the national laboratories as technical memoranda.

Inquiries or comments regarding the peer review plan of this report may be submitted to:

Joan Glickman  
Biomass Program  
[joan.glickman@ee.doe.gov](mailto:joan.glickman@ee.doe.gov)

Kevin Stork  
Vehicle Technologies Program  
[kevin.stork@ee.doe.gov](mailto:kevin.stork@ee.doe.gov)

Office of Energy Efficiency and Renewable Energy  
U.S. Department of Energy  
1000 Independence Avenue S.W.  
Washington, DC 20585-1290  
Tel: (202) 586-8077  
Fax: (202) 586-1640

The Energy Independence and Security Act of 2007 calls on the nation to significantly increase its use of renewable fuels to meet its transportation energy needs. The law establishes a new renewable fuel standard that requires the nation to use of 36 billion gallons of renewable fuel in its vehicles by 2022. Given that ethanol is the most widely used renewable fuel in the U.S. and production is expected to grow steadily over the next several years, ethanol – both from corn as well as cellulosic feedstocks – will likely make up a significant portion of the new renewable fuel requirements.

The vast majority of ethanol used in the U.S. is blended with gasoline to create E10 – that is, gasoline with up to 10 percent ethanol. In light of projected growth in ethanol production, as well as the new RFS, most analysts agree that the E10 market will be saturated in the next few years, or as soon as 18 months. Given this reality, DOE and others have begun assessing the viability of using intermediate ethanol blends as one way to potentially accommodate growing volumes of ethanol.

In Summer 2007, DOE initiated a test program to assess the potential impacts of intermediate ethanol blends on conventional vehicles (i.e., non-FFVs) as well as on other engines that rely on gasoline. The latter includes small non-road engines such as those in lawn and garden equipment as well as engines for marine applications, motorcycles, and snowmobiles. The DOE test program has been co-led and funded by the Offices of the Biomass Program and Vehicle Technologies Program with technical expertise from the Oak Ridge National Laboratory (ORNL) and the National Renewable Energy Laboratory (NREL).

DOE’s test program focuses specifically on the effects of E15 and E20 - that is, gasoline blended with 15 and 20 percent ethanol respectively. Through a wide range of experimental activities, DOE is evaluating the effects of these intermediate ethanol blends on the emissions (both tailpipe and evaporative), catalyst and engine durability, vehicle driveability or engine operability, and materials compatibility associated with these vehicles and engines.

A list of completed as well as planned studies is provided in the table below. Reports will be issued as data become available from the various studies.

<b>Intermediate Blends Test</b>	<b>Focus</b>	<b>Test Labs</b>	<b>Status</b>
Emissions and Catalyst Temperature	Legacy fleet emissions, catalyst temperatures, short-term operational issues	ORNL, TRC, NREL, Colorado Department of Public Health – Aurora Emissions Technical Center	<ul style="list-style-type: none"> <li>• Data for 13 vehicles provided in the Summer 2008 report.</li> <li>• Data from remaining 3 vehicles to be reported in January 2009 report.</li> </ul>
Small Non-Road Engines – Emissions, Temperatures, Full-Useful Life	<ul style="list-style-type: none"> <li>• Six engines examined for emissions, operating temperatures, performance issues</li> <li>• 17 engines operated to full useful life with emissions monitoring</li> </ul>	ORNL, NREL, TRC	Completed. Data presented in the Summer 2008 report.
Emissions on Wide Range of Ethanol Blends	Co-sponsored by EPA	SwRI	In progress
Evaporative Emissions	<ul style="list-style-type: none"> <li>• Evaporative emissions, permeation.</li> <li>• Collaboration with CRC Project E-77</li> </ul>	SwRI	In progress
Catalyst Durability	<ul style="list-style-type: none"> <li>• Long-term catalyst durability on 80-100 vehicles</li> <li>• Collaboration with CRC Project E-87</li> </ul>	TRC, Other	In progress
Driveability	<ul style="list-style-type: none"> <li>• Six non-FFVs</li> <li>• Collaboration with CRC Project CM-133</li> </ul>	Yakima, WA track facility	<ul style="list-style-type: none"> <li>• Testing completed.</li> <li>• Data to be presented in January 2009 report.</li> </ul>
Fuel System Materials Compatibility	<ul style="list-style-type: none"> <li>• Fuel system components compatibility</li> <li>• Collaboration with CRC Project AVFL-15</li> </ul>	TRC	In progress
Specialty Engines	Motorcycles, marine, ATVs, other	TBD	Test plans under development