REAP Comments on the Exxon Dataset Proposed for Inclusion in the 2006 CARB Predictive Model Update

REAP has reviewed the Exxon dataset proposed for inclusion in the 2006 CARB Predictive Model update, and has the following concerns.

- REAP contacted Exxon for information about the lab conducting the work and the process involved. The work was conducted at an Exxon lab in New Jersey, on a completely "internal" basis. To our knowledge, there is no available information about quality control or quality assurance. The study does not appear to be published, or reviewed by any third party or partner.

- There is no available information about how the fuel specifications were chosen for the test. For example, why did Exxon choose to hold sulfur, aromatics and olefins constant, but not Reid Vapor Pressure (RVP) and distillation temperature? The Exxon employee that chose the fuels has since passed away. Exxon was not able to offer further information about the fuel specifications, or the methodology used to determine them.

- Exxon indicated that the ethanol fuel was splash blended, which is the reason that its Reid Vapor Pressure or RVP (7.2-7.3) is significantly higher than the MTBE fuel (6.4) and the non-oxygenated fuel (6.5). However, in-use data reveals that the differences in RVP between MTBE, non-oxy and ethanol blended fuel is not as severe as represented in the Exxon test. For example, ARB data available to Exxon in 1999 reveals that the average in-use MTBE fuel had an RVP of 6.78 (not 6.4), and according to 2004 data the average ethanol fuel had an RVP of 6.87 (not 7.3). So while in-use data suggests a statistically insignificant RVP difference (6.78 to 6.87), the Exxon test creates a significant variation (6.4 to 7.3).

- The distillation temperature levels tested appear to be significantly lower than in-use averages. For example, the average in-use non-oxy fuel has a T50 of 206 and a T90 of 307, yet Exxon's non-oxy fuel had a T50 of 192 and a T90 of 279. The same depressed distillation temperatures show up in Exxon's MTBE fuel. Exxon's MTBE fuel had a T50 of 191 and a T90 of 272, but then-existing data shows that the average MTBE fuel had a T50 of 197 and a T90 of 310. There is an equally strong derivation from in-use fuel for ethanol fuels (198 vs. in-use 209 for T50; 274 vs. in-use 307 for T90). Exxon has not indicated why it chose to test fuels with depressed distillation temperatures. The recently published CRC E-67 study shows that, in places, distillation temperature can have a strong and directional effect on the emissions impacts of adding ethanol to gasoline.

- There are additional questions about the distillation temperatures chosen for the Exxon test. For example, it was well recognized in 1999 that removing MTBE from gasoline significantly increases T50. This expectation was discussed in the Air Resources Board's "Initial Statement of Reasons – Proposed California Phase 3 Gasoline Regulations" (October 22, 1999), and is reflected by a comparison between the 1998 in-use MTBE fuel (T50 of 197) and the in-use non-oxygenated fuel (T50 of 206). This expectation was also the basis for the ARB's adjustments to the regulation in 1999, which featured increasing the T50 and T90 limits to increase flexibility for refiners to remove MTBE. However, the Exxon test removes MTBE from the blend without significantly increasing T50 (191 for MTBE fuel versus 192 for non-oxygenated fuel). It would be useful to know why Exxon chose not to increase T50 in its non-oxygenated fuel.

Based on the concerns above, we feel that more information about the Exxon study should be disclosed before ARB considers including the dataset in the database. We have noted that the ARB has decided to put the Mexican database into a separate database pending resolution of some issues raised by WSPA. We feel it would be appropriate to exercise similar caution with regard to the Exxon dataset.