Western States Petroleum Association's Comments on ARB October 10th Release of GREET and OPGEE Information

Overall Process Concerns

WSPA provided initial comments after the Advisory Panel meeting on this issue. We continue to be concerned about the introduction of a GREET model revision until it has been fully vetted by impacted stakeholders, and we question the transition to GREET 2013 until the model has been fully peer reviewed. In addition, ARB needs to present to stakeholders uncertainty analysis of the outputs from not only GREET, but other model changes proposed during the current rulemaking effort.

ARB requested input on the models by October 24, 2014. Both of these spreadsheet models are relatively complex with many inputs. As such, a two-week review period is insufficient to perform a detailed assessment of the models and is an inadequate amount of time for either stakeholder or peer review. For ARB to move forward with an inadequately reviewed model is not fair to regulated parties, especially if the new model is adopted and then issues are found with the model assumptions or outputs after appropriate peer and stakeholder review.

Nonetheless, we offer a number of comments on the models and supporting information as summarized below.

Review of CA-GREET 2.0 and OPGEE v1.1 Draft D

The focus of this review was on the two models and supporting information posted on ARB's website on October 10, 2014, at http://www.arb.ca.gov/fuels/lcfs/ca-greet/ca-greet.htm (CA-GREET 2.0) and http://www.arb.ca.gov/fuels/lcfs/crude-oil/crude-oil.htm (OPGEE v1.1 Draft D).

General Comment

The OPGEE model makes use of fuel production and transportation emissions based on the GREET model (e.g., for electricity, natural gas, etc.). According to notes in the OPGEE model in the "Fuel Cycle" tab, the emission rates are from the GREET1_2013 model. Although GREET1_2013 is the basis for the CA-GREET 2.0 model, it appears that staff will be making adjustments to many of the GREET1_2013 inputs to better represent California.

Will the final CA-GREET 2.0 values be used in the final version of OPGEE? We encourage ARB staff to ensure that there is consistency in the inputs and outputs that are used or developed in both CA-GREET and OPGEE.

Comments Specific to CA-GREET 2.0

Based on our review of the draft support document comparing CA-GREET 1.8B, GREET1_2013, and CA-GREET 2.0 (http://www.arb.ca.gov/fuels/lcfs/ca-greet/ca-greet2.0-supdoc-101014.pdf), as well as a review of the spreadsheet models, WSPA has the following comments:

- WSPA has concerns about the substantial change in the diesel CI value relative to the CARBOB CI value between the two versions of GREET, and we still require additional time to evaluate this change. WSPA will be requesting a conference call with ARB and Argonne Labs to discuss this issue further.

  The differences seem to be based on changes in refining efficiencies for producing diesel vs. CARBOB, the refining energy consumed relative to each product, and changes in the energy mix –all of which require further explanation.

- For a number of the fuel pathways, the documentation notes there are no default values for some of the inputs. Does this indicate that ARB will no longer include "generic" pathway values in Tables 6 and 7 of the regulation? If generic values are to be included, ARB should publish the specific inputs used for those values, and the corresponding model results, for review and comment.

- Lime production is discussed on pages 11 and 12 of the support document. There appears to be a large discrepancy in emissions per ton between different versions of GREET. Did ARB staff consult EPA's AP-42 documentation to serve as a cross-check on these results? (e.g., see http://www.epa.gov/ttnchie1/ap42/ch11/final/c11s17.pdf)

- ARB is proposing to use a value of 5.4% for denaturant volume in denatured ethanol. Were any test data available with which to validate this assumption?

- ARB is proposing to not account for credit applied in GREET1_2013 for reduced enteric emissions from feeding animals distillers grains and solubles (DGS). If that decision is re-visited and a credit for DGS is applied, ARB should also investigate the potential for increased N_2O emissions as a result of the higher nitrogen content in animal waste as a result of the higher protein content of DGS versus feed corn.

- The crude oil discussion beginning on page 46 of the support document references GREET1_2013 as the source of input data for crude oil recovery in CA-GREET 2.0. Is that correct? It was our understanding that OPGEE would be used to develop carbon intensity estimates for crude oil extraction and transportation.

- Refinery efficiency is an important input to GREET in estimating refining emissions. It appears that an equation using API gravity, sulfur content, refinery heavy product yield, and refinery complexity index was used estimate refinery efficiency. Did ARB staff review the basis for this equation, and how were the inputs to the equation developed?

Comments Specific to OPGEE v1.1 Draft D

We based our review on the updated user's guide and technical documentation (http://www.arb.ca.gov/fuels/lcfs/crude-oil/opgee_v1.1_draftd_documentation.pdf) and the updated model. We have the following comments:

- It would be very useful for ARB staff to publish results from the model when changes are made, rather than simply posting a revised version of the model for review. We understand that running all crudes through the model can be time-consuming, but a comparison of several representative crudes would be helpful. In particular, publishing both inputs and outputs for several crudes would make reviewing the model much easier so that analysts outside of ARB can first replicate the ARB results and then assess impacts of individual model revisions.

- It appears that some of the changes made to OPGEE to update fugitive emissions were based on California survey data (number of valves, number of pump seals, etc.). Were these data applied to all fields, or just to California fields? What survey data are being used, and how representative are they? Has ARB published the survey data for review?

- Based on our analysis, the changes from OPGEE v1.1 Draft C to OPGEE v1.1 Draft D resulted in about a 0.9 gCO2e/MJ increase in carbon intensity for a representative set of foreign fields (e.g., Iraq-Basra Light, Saudi-Arab Light, Ecuador - Oriente). However, for some California fields the increase ranged from 0.9 to 1.3 g CO2e/MJ. What is the basis for this difference?