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MEMO

TO: Alliance of Automobile Manufacturers

FROM: NERA Economic Consulting

DATE: 10 April 2019

SUBJECT: **CAFE Standards Analysis: Data Back Up**

This memo summarizes the information provided as data back-up for the report authored by NERA Economic Consulting and Trinity Consultants entitled "Evaluation of Alternative Passenger Car and Light Truck Corporate Average Fuel Economy (CAFE) Standards for Model Years 2021-2026" and dated October 26, 2018 ("NERA/Trinity Report").

I. Data Submission Materials

A. Data files

1. Inputs (all Excel format)

a. Parameters file

- Copies of NHTSA parameter information used in the analysis (e.g., fuel import assumptions; gasoline price forecast; etc.).
- Non-NHTSA parameters from other sources (e.g., benefit-per-ton values from literature, historical fuel economy information).

b. MOVES baseline fleet

- Baseline fleet information (2016-2050 cars, trucks, and car/truck VMT by model year) as provided by Trinity.

2. Fleet results

a. Fleet and VMT projections

- Projections of fleet population (cars, trucks, and total vehicles) and VMT (total non-rebound; overall and by class) by model year, calendar year, and scenario.

b. New vehicle information

- Aggregated information on new vehicles in model years 2017-2029, including increases in cost, reductions in dollar-per-mile, and average adjusted MPG in each scenario.

3. MOVES output

a. MOVES model output (tailpipe emissions)

- MOVES output (received from Trinity, with minor re-formatting): tailpipe emissions by calendar year, scenario, model year, class, and fuel type.

b. MOVES activity summary

- MOVES information on vehicle counts and VMT by fuel type.

4. Fuel consumption and emissions

a. Fuel consumption

- Total fuel consumption (gallons) by scenario, model year, and calendar year.

b. Fuel consumption by fuel type

- Fuel consumption broken out by fuel type.

c. Tailpipe emissions

- Tailpipe emissions (re-formatted from Trinity information).

d. Upstream emissions

- Upstream emissions estimated based on fuel consumption and assumptions about fuel import, extraction, and refining.

B. Stata do files

1. Modeling

a. Fleet models (NVMM, Scrappage, Rebound) code

- Do file that runs NVMM (including calibration, second stage regression, and new vehicle sales forecasting), scrappage regression, fleet effects, and rebound effect.
- The code only runs one alternative scenario at a time (i.e., must be run three times, once each for scenarios 8, 5, and 1 vs. baseline).

b. Fleet summary code

- Re-formats and appends output from fleet models before converting to Excel spreadsheets.

2. Intermediate estimations

a. Fuel consumption code

- Estimates gallons of fuel consumed in each scenario (by model year and calendar year).

b. Fuel consumption by fuel type code

- Proportions fuel consumption across the three fuel types in the MOVES data based on MOVES VMT by fuel type information.

c. Tailpipe emissions code

- Cleans and re-formats tailpipe emissions information as received from MOVES to match format of upstream emissions estimates.

d. Upstream emissions code

- Estimates upstream emissions based upon fuel consumption by fuel type and fuel import/refining assumptions.

3. Net benefits codes

These do files use the inputs above (Sections I.A.2-I.A.4) to estimate the social costs and benefits of the alternative CAFE standards compared to the augural standards.

a. Tech costs and valuation of fuel economy changes

b. Noise and congestion

c. Safety

d. Mobility

e. Refueling time

f. Petroleum market externalities

g. Emissions damage reductions