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Staff proposes to use this and similar outlines to develop the white papers/chapters of the review report due to the Board in December 2011. Please review this outline and identify where data are insufficient and what data are necessary to meet the requirements of the regulation review. This outline is meant to be a high-level overview of the topic; more detail will follow in subsequent white papers/chapters.

VIII. Economic Impacts (Topics 8 & 12)

A. Background on topic

1. Introduction

- a. In 2009, staff estimated the costs of producing the petroleum-based fuels—gasoline, diesel, and CNG—and the costs of producing the lower-carbon-intensity (CI) transportation fuels that could be used in combination with petroleum fuels to meet the LCFS.
- b. The estimate of economic impacts of the LCFS was necessarily assumption-based.
- c. For the cost of producing cellulosic ethanol, staff used analyses conducted by the National Renewable Energy Lab (NREL) and updated the costs to 2007 dollars, also taking into account expected technological improvements.
- d. Staff utilized gasoline and diesel scenarios separately and individually.
- e. Staff used \$66 - \$88/bbl for the price of crude oil for 2010 – 2020, which came from the 2007 CEC Integrated Energy Policy Report (IEPR) and was the same used for the AB 32 Scoping Plan.
- f. Tax incentives were available and considered for ethanol and biodiesel.
- g. The results were a potential cost savings of \$0 - \$0.08 per gallon for Californians.
- h. Crude oil prices, production of low-CI fuels, and timing of alternative fuels penetration can greatly affect the cost of transportation fuels.
- i. The LCFS has no adverse effect on small businesses because regulated parties are mostly large businesses. The owners of fueling service stations are considered the small businesses, but since the LCFS regulation does not mandate the installation of E85, CNG, and hydrogen dispensers at any specific fueling station, those owners who choose to invest in providing these fuels at their stations will do so with the expectation of recovering the costs and increasing profits.
- j. Staff assumes that the refineries in the State will continue to operate at capacity, and they will become net exporters of CARBOB. The importers of the blendstocks, typically oil companies, will be impacted by the LCFS because these imported blendstocks that are used in the

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California transportation fuel market will receive a premium price over other markets.

- k. The impact on the State was a potential overall savings, given the assumptions stated above. As a result of the requirements of federal RFS2, any infrastructure costs can be attributed to the federal program and not the LCFS.
 - l. No vehicle marginal production costs were included in the original economic analysis, as the LCFS does not mandate the use of specific vehicles. Additional ZEVs and FFVs will be in the market either through additional mandates or customer preference.
2. Purpose for revisiting this topic

To address the Advisory Panel review requirements as stated in the LCFS Advisory Panel Draft Workplan (Version 1) the scope of each review shall include, at a minimum, consideration of the following areas: **(8) The LCFS program's impact on state revenues, consumers, and economic growth** and **(12) Significant economic issues; fuel adequacy, reliability, and supply issues; and environmental issues that have arisen.**

B. ARB methods of analysis

1. Cost-effectiveness
 - a. We will utilize the same economic analysis model as the original 2009 LCFS analysis, including, but not limited to, using the same scenarios for gasoline and diesel and no capital cost for bio-refineries because the latter is absorbed by the federal RFS2. ARB may develop a scenario that will discuss the cost of low carbon fuels assuming the RFS2 is unsuccessful.
 - b. Update the feedstock production costs (i.e. higher costs for corn, woodchips, and MSW).
 - c. Update the costs from 2007 dollars to the most recent available CEPCI (Chemical Engineering Plant Cost index).
 - d. Remove all tax incentives for corn ethanol, cellulosic ethanol, and biodiesel. In the new analysis, ARB will assume that all the federal subsidies that are due to expire at the end of 2011 will not be reinstated.
 - e. Increase the crude prices based on the 2011 IEPR high price case for the 2012 through 2020 periods (from \$70 - \$88 per bbl to \$102 - \$121). CEC may increase the high case by an additional \$20/bbl in the near future and, if so, would be incorporated into our assessment.
 - f. Remove the infrastructure costs, as they are absorbed by the RFS2 program. These costs will be reinstated for the scenario in which RFS2 is unsuccessful.

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- g. ARB may explore a range of “safety valve” options that could be used to overcome compliance problems associated with a shortage of low-carbon fuels, a shortage of affordable credits, or both.

2. Impact on the State

- a. Update the state’s excise tax from the previously 18 cents/gal to the current 36 cents/gal.
- b. Remove the 9 cents/gal of State tax break for E-85.
- c. Develop a new Form 399 to show the impact on the State.
- d. Although most, if not all, of the low carbon fuels will be produced outside California, in the absence of federal subsidies and assuming new technology will progress slowly, the cost of low carbon fuels may rise to levels comparable to the cost of petroleum fuels or higher. After adjusting for the new crude oil prices, CARB will analyze any potential cost that consumers may incur.

C. Conclusions and Recommendations

Our conclusion will reflect analysis results and Panel discussions.