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## Appendix B Part A Technology Assessment of Potential Low Carbon Fuels

This Appendix contains a description of some of the fuels that might be used to comply with the LCFS. Also discussed for each case are conversion technologies and production pathways currently available (commercially) or under development. The diversity of promising low-carbon fuel options along with the massive research and development efforts to bring advanced technologies to the market leads us to conclude that compliance with the LCFS is feasible. The mandate of the federal Energy Independence and Security Act of 2007 (EISA) to use increasing amounts of advanced and cellulosic biofuel<sup>1</sup> beginning in 2009/2010 and continuing on through 2022 will further stimulate improvements to the current conversion technology of advanced biofuels.

### A. Overview of Current California Transportation Fuels

#### 1. Gasoline

Currently, most gasoline in California contains six percent ethanol by volume. Some blends of eight percent ethanol by volume are available for sale in the state. California consumed about 15.8 billion gallons of gasoline(1) in 2008. California's gasoline consumption represents about 11 percent of the total gasoline consumption in the United States(2). According to EMFAC2007, there are approximately 25 million gasoline powered vehicles in California. There are 15 refineries in California making gasoline and diesel fuel(3). Recently, Kinder Morgan, a common carrier pipeline and terminal operator, responsible for distribution of 60 percent of California's motor vehicle fuels announced that in 2010 gasoline distributed by them would have 10 percent ethanol.

#### 2. Diesel

California diesel fuel must meet a 15 parts per million by weight sulfur standard and specifications limiting the aromatic hydrocarbon content to 10 percent for large refiners and 20 percent for small refiners. In California approximately 4.2 billion gallons of diesel fuel(4) were consumed in 2008. California's diesel consumption represents about eight percent of the total diesel fuel consumption in the United States. There are approximately 875,000 diesel fuel vehicles in California(4). A majority of those diesel fuel vehicles are heavy duty vehicles.

### B. Current Technologies

This section presents the staff's assessment of fuels and conversion technologies that are currently available for commercial use. These are presented in the Table B-1 below, categorized by fuel type, fuel, and feedstocks/process.

<sup>1</sup> As defined in the Energy Independence and Security Act of 2007