college alternative fuel programs, curriculum development, and train-the-trainer support (including equipment purchases).

To date, these agreements have provided $22.0 million in training funds for 12,472 individuals and more than 135 businesses and municipalities, as shown in Table 22. The $4.5 million in CCCCCO grants are not included in this table because they are not being used for direct training at this time.

TRANSPORTATION ENERGY TRENDS

Trends show continuing declines in gasoline consumption. Since 2008, trends in California and the rest of North America show a sustained decline of gasoline consumption. Previous Energy Commission staff analysis from the 2009 and 2011 IEPRs identified this trend, showing a 6 percent decline in gasoline consumption, reflecting the effect of the national economic downturn and vehicle efficiency improvements. The Energy Commission and other experts expect this decline in gasoline consumption to continue for another decade because national vehicle economy standards (Corporate Average Fuel Economy or CAFÉ) require automobile and light truck manufacturers to increase average miles-per-gallon performance from 27.5 to 35.5 in 2016 and to 54.5 in 2025. As a consequence of improved vehicle efficiency, California should experience a 2-billion-gallon decline in gasoline consumption from 14.6 billion gallons per year in 2012 to 12.7 billion gallons per year by 2022. This change could affect production levels of some of the 20 existing crude oil refineries in California, 13 of which produce gasoline and diesel fuel for California vehicles.

Trends show increases in other transportation fuels. Since 2011, trends in California and the rest of North America show increases in crude oil and natural gas production. By 2012, North America experienced an upsurge in crude oil and natural gas production because horizontal drilling and hydraulic fracturing
technology advances lowered exploration, drilling, and recovery costs as discussed in Chapter 7. The 2009 and 2011 IEPRs noted diesel fuel consumption demand growing at a rate of 1 to 2 percent per year for 20 years. The economic recession interrupted this trend for four years, but the growth has been restored in 2012. Most of this change reflects growth in fuel consumption from the transport of freight in trucks. Natural gas trucks may also offer an option to address goods movement growth. By 2014, up to 20 new diesel models of passenger vehicles and light trucks should be available in North America, possibly accelerating a transition to diesel fuel from gasoline, improving vehicle fuel efficiency, and providing another market for biodiesel and renewable diesel. Also, although initially small, significant future growth is expected for electric and hydrogen vehicles.

Displacement of Petroleum and Potential Growth of Alternative Fuels in California

Alternative fuels include liquid and gaseous fuels and electricity used in cars, trucks, and buses. Liquid biofuels are blended with gasoline or diesel or, in some instances, replace gasoline (E85) or diesel (B100 or 100 percent biodiesel and renewable diesel). Biofuels are produced through several methods and technologies and are derived from dozens of purpose-grown crops (corn, sugarcane, and grain sorghum) and agriculture, forest, and urban waste residue. Natural gas fuel is also used in all types of vehicles as CNG or liquefied natural gas (LNG), and electric and hydrogen vehicles have been introduced with expectations for significant growth. As discussed in Chapter 3, biomethane or biogas is another form of natural gas, and dimethyl ether (DME) produced from natural gas and biogas offers a clean-burning diesel alternative option. Electricity is produced from multiple sources including hydroelectricity, natural gas, nuclear, coal, and renewable resources (solar, wind, geothermal, and biomass).

By 2012, California experienced modest but notable increases in the use of alternative fuels. During the period from