

ABSTRACT
PROSPECTS FOR HYBRIDS, DIESEL AND HYDROGEN VEHICLES

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While evolutionary changes in vehicle technology can provide GHG emission reductions of about 20 to 25 percent, larger reductions in vehicle GHG emissions will require the use of electric hybrid technology and or diesel technology in the medium term and possibly hydrogen technology in the long term. The analysis examines the cost, performance and market implications of these alternatives. Hybrid electric technology spans a range of designs (of which the Toyota Prius is one example) and their many manifestations are reduced to three cases likely to enter the market by 2010. The main findings of the analysis are:

- Hybrid technology is only part of the strategy to reduce GHG emissions but not the main strategy as it is ineffective for many consumers
- While the Prius has received the most attention, other hybrid designs with somewhat lower fuel economy potential but significantly lower costs may be a better option for wider market
- Diesel technology can complement hybrid technology by providing significant efficiency gains to markets where hybrids are not effective
- Unless subsidized, ultimate market size for diesel and hybrid vehicles are expected to be in the 20 percent range (each) with oil around \$50/bbl.
- The current fuel economy of fuel cell vehicles on pure hydrogen is quite low, and only comparable to those of hybrids
- Fuel Cell / Hydrogen vehicles need a **doubling of fuel economy** and a **cost reduction of about two orders of magnitude** to have an effect on GHG emissions
- Serious consideration needs to be given to an electric future versus a hydrogen future.