GREEN DESIGN BUILDING THE FUTURE

DRIVE

Charge! The push to make cars less polluting is driving the industry toward a cleaner energy future. By Susan Cosier

From hot rods to hybrids, cars have long captivated Americans. More than 200 million vehicles now clog our roads and fill our skies with pollutants that can cause acid rain, smog, and global warming. In the United States these vehicles account for as much as 25 percent of our annual greenhouse-gas emissions. But now that the SUV era seems to be drawing to a close, the race is on to develop cleaner alternatives that will make existing vehicles more efficient and reduce our reliance on fossil fuels. "There are many incremental changes being made that will add up to substantial improvements over the next 20 years," says Dan Sperling, professor of transportation engineering and environmental policy at the University of California, Davis, and the coauthor of *Two Billion Cars*—named for the number of vehicles experts estimate will be on roads worldwide within 20 years.

It's nearly impossible to drive down the street these days without seeing a hybrid, and demand is so great that the waiting time for a Toyota Prius has been six months. Advances in efficiency now enable cars and trucks to cover more ground on less gasoline. Using computer models to predict greenhouse-gas output, one study showed that more efficient vehicles could slash emissions by as much as 612 million metric tons a year by 2050, or about 12 percent of what we currently emit. These new vehicles are more expensive, but as they become mass marketed, their prices are expected to come down, and drivers should save at the pump with higher-efficiency models.

Reducing the environmental impact of cars will most likely require a combination of technologies—many already incorporated in the latest models—including new power sources, lower-carbon fuels, and increased efficiency. "The bottom line is that there's really not a silver bullet; there are a bunch of silver BBs," says Terry Penney, a laboratory program manager for advanced vehicle and fuel technologies at the U.S. Department of Energy's National Renewable Energy Laboratory. Check out the best on the next pages.

Google is exploring technology that would allow drivers to supply the power grid when their plug-in electric cars are not in use. Better Place, a startup, plans to build gas station-like depots where drivers will be able to plug in or trade batteries.