**NATIONAL ACADEMY OF SCIENCES**
**DIVISION ON ENGINEERING AND PHYSICAL SCIENCES**
**BOARD ON ENERGY AND ENVIRONMENTAL SYSTEMS**

# Assessment of Resource Needs for Development of Fuel Cell and Hydrogen Technology

## Statement of Task

The National Academy of Sciences National Research Council will appoint a committee to carry out a study of fuel cell technologies that provides a budget roadmap (e.g., what investments in R&D, demonstrations, skilled people, infrastructure will be required) for the development of fuel cell technologies and the transition from petroleum to hydrogen in a significant percentage of the vehicles sold by 2020. The committee will:

(1) establish as a goal the maximum percentage practicable of vehicles that the committee determines can be fueled by hydrogen by 2020;

(2) determine the amount of funding required as a whole (public and private), and to the extent possible the Federal investments required, to meet the goal established under paragraph (1). Consideration will be given to investments needed for R&D, demonstrations, skilled people, and infrastructure;

(3) determine what actions are required to meet the goal established under paragraph (1);

(4) examine the need for expanded and enhanced Federal research and development programs, changes in regulations, grant programs, partnerships between the Federal Government and industry, private sector investments, infrastructure investments by the Federal Government and industry, educational and public information initiatives, and Federal and State tax incentives to meet the goal established under paragraph (1);

(5) consider the role that the use of hydrogen in stationary electric power applications, as well as advanced vehicle technologies, will play in stimulating the transition to hydrogen-fueled hybrid electric vehicles. Also consider whether other technologies would be less expensive or could be more quickly implemented than fuel cell technologies to achieve significant reductions in carbon dioxide emissions and oil imports;

(6) take into account any reports relating to fuel cell technologies and hydrogen-fueled vehicles, including (a) the National Academies report issued in 2004 entitled Hydrogen Economy: Opportunities, Costs, Barriers, and R&D Needs; and (b) the report prepared by the U.S. Fuel Cell Council in 2003 entitled Fuel Cells and Hydrogen: The Path Forward;

(7) consider the challenges, difficulties, and potential barriers to meeting the goal established under paragraph (1); and

(8) with respect to the budget roadmap (a) specify the amount of funding required on an annual basis from the Federal Government and industry to carry out the budget roadmap; and (b) specify the advantages and disadvantages to moving toward the transition to hydrogen in vehicles in accordance with the timeline established by the budget roadmap.

(9) Write a report documenting its study and assessment.