

Fact Sheet: Hydrogen Fuel: a Clean and Secure Energy Future

In his State of the Union address, President Bush announced a \$1.2 billion hydrogen fuel initiative to reverse America's growing dependence on foreign oil by developing the technology for commercially viable hydrogen-powered fuel cells to power cars, trucks, homes and businesses with no pollution or greenhouse gases. The hydrogen fuel initiative will include \$720 million in new funding over the next five years to develop the technologies and infrastructure to produce, store, and distribute hydrogen for use in fuel cell vehicles and electricity generation. Combined with the FreedomCAR (Cooperative Automotive Research) initiative, President Bush is proposing a total of \$1.7 billion over the next five years to develop hydrogen-powered fuel cells, hydrogen infrastructure and advanced automotive technologies.

Under the President's hydrogen fuel initiative, the first car driven by a child born today could be powered by fuel cells. The hydrogen fuel initiative complements the President's existing FreedomCAR initiative, which is developing technologies needed for mass production of safe and affordable hydrogen-powered fuel cell vehicles. Through partnerships with the private sector, the hydrogen fuel initiative and FreedomCAR will make it practical and cost-effective for large numbers of Americans to choose to use clean, hydrogen fuel cell vehicles by 2020. This will dramatically improve America's energy security by significantly reducing the need for imported oil, as well as help clean our air and reduce greenhouse gas emissions.

Background on Today's Presidential Action

- Fuel Cells are a Proven Technology: America's astronauts have used fuel cells to generate electricity since the 1960s, but more work is needed to make them cost-effective for use in cars, trucks, homes or businesses. Additional research and development is needed to spur rapid commercialization of these technologies so they can provide clean, domestically produced energy for transportation and other uses.
- The President's Initiatives Will Overcome Key Technical and Cost Barriers for Fuel Cells:
 - Lowering the cost of hydrogen: Hydrogen is four times as expensive to produce as gasoline (when produced from its most affordable source, natural gas). The hydrogen fuel initiative seeks to lower that cost enough to make fuel cell cars cost-competitive with conventional gasoline-powered vehicles by 2010; and to advance the methods of producing hydrogen from renewable resources, nuclear energy, and even coal.
 - Creating effective hydrogen storage: Hydrogen storage systems are now inadequate for use in the wide range of vehicles that consumers demand. New technology is needed.
 - Creating affordable hydrogen fuel cells: Fuel cells are now ten times more expensive than internal combustion engines. The FreedomCAR initiative is working to reduce that cost to affordable levels.
- America's Energy Security is Threatened by Our Dependence on Foreign Oil:
 - America imports 55 percent of the oil it consumes; that is expected to grow to 68 percent by 2025.
 - Nearly all of our cars and trucks run on gasoline, and they are the main reason America imports so much oil. Two-thirds of the 20 million barrels of oil Americans use each day is used for transportation; fuel cell vehicles offer the best hope of dramatically reducing our dependence on foreign oil.
- Hydrogen fuel Will Help Ensure America's Energy Independence:
 - Through the hydrogen fuel initiative and FreedomCAR, the federal government, automakers and energy companies will work together to overcome the technological and financial barriers to the successful development of commercially viable, emissions-free fuel cell vehicles that require no foreign oil.
 - Hydrogen is domestically available in abundant quantities as a component of natural gas, coal, biomass, and even water.

- The Department of Energy estimates that the hydrogen fuel initiative and FreedomCAR initiatives may reduce our demand for petroleum by over 11 million barrels per day by 2040 - approximately the amount of oil America imports today.
- Fuel Cells Will Improve Air Quality and Dramatically Reduce Greenhouse Gas Emissions:
 - Vehicles are a significant source of air pollution in America's cities and urban areas. Hydrogen fuel cells create electricity to power cars without any pollution.
 - The hydrogen fuel and FreedomCAR initiatives may reduce America's greenhouse gas emissions from transportation alone by more than 500 million metric tons of carbon equivalent each year by 2040. Additional emissions reductions could be achieved by using fuel cells in applications such as generating electricity for residential or commercial uses.
- Hydrogen is the Key to a Clean Energy Future:
 - It has the highest energy content per unit of weight of any known fuel.
 - When burned in an engine, hydrogen produces effectively zero emissions; when powering a fuel cell, its only waste is water.
 - Hydrogen can be produced from abundant domestic resources including natural gas, coal, biomass, and even water.
 - Combined with other technologies such as carbon capture and storage, renewable energy and fusion energy, fuel cells could make an emissions-free energy future possible.
- The Hydrogen Fuel Initiative Complements President Bush's FreedomCAR initiative:
 - In 2002, President Bush launched FreedomCAR, a partnership with automakers to advance high-technology research needed to produce practical, affordable hydrogen fuel cell vehicles that American consumers will want to buy and drive.
 - The hydrogen fuel initiative will develop technologies for hydrogen production and distribution infrastructure needed to power fuel cell vehicles and stationary fuel cell power sources.
- President Bush's Budget Provides Strong Support for Hydrogen Fuel and FreedomCAR:
 - President Bush proposes \$1.7 billion in funding for the hydrogen fuel initiative and FreedomCAR over the next five years, including \$720 million in new funding for hydrogen fuel.
 - The President's FY 2004 budget request for hydrogen and fuel cell research and development and advanced automotive technologies through the hydrogen fuel and FreedomCAR programs is \$273 million.