Steel manufacturers have made great strides in energy efficiency to the point that today’s steel making processes are optimized. To further lower energy intensity and to substantially reduce emissions, new processes must be developed that do not rely on carbon fuels. The steel industry has already begun this long-range research, but government support will be essential to successful conclusion of this work.

Background/Situation:

- Over the past twenty years, the U.S. steel industry has increased its energy efficiency by 30% percent and has reduced its CO₂ emissions by 35%. However, further significant gains in energy efficiency will require the development of completely new, breakthrough iron and steel making processes.

- Since 1975, steel companies have invested over $60 billion on research and development of new technologies that would reduce energy consumption in the steel industry, and that investment has paid off by enhancing the industry’s competitiveness and achieving its environmental goals.

Importance of R&D to the Steel Industry:

- AISI has been working with leading universities and the Department of Energy (DOE) on projects aimed at developing revolutionary new ways of making steel while emitting little or no CO₂ through research called the CO₂ Breakthrough Program.

- Two potential “breakthrough technologies” that are currently being tested are:
  - Molten Oxide Electrolysis: A program conducted at the Massachusetts Institute of Technology (MIT) seeks to produce iron by molten oxide electrolysis which generates near-zero CO₂ emissions.
  - Ironmaking by Hydrogen Flash Smelting: “Flash Smelting” technology, a program conducted at the University of Utah, is adapted from mining processes and includes advances in furnace technology utilizing hydrogen.

Industry Policy Request:

- Support continued government-industry cost-sharing of R&D into breakthrough technologies for the steel industry, such as through funding of the DOE Industrial Technologies Program.

- Provide tax incentives and other policies that encourage development of new energy alternatives, including clean coal and sequestration technologies.