Hydrogen, the lightest element, is a versatile energy carrier with the potential to perform many functions in a low-carbon economy, but current hydrogen production is carbon-intensive.

Worldwide demand for chemicals made from oil and gas is growing rapidly, driven by increases in demand for plastics, as well as fertilizers, synthetic fabrics, paints, and many other products.

A federal policy agenda should include:
- Shifting DOE’s focus toward industry, energy storage, and heavy-duty transportation uses
- Funding a portfolio of pilot- and commercial-scale demonstration projects or clean hydrogen “hubs”
- Establishing more effective production tax incentives
- Expanding range of technologies eligible for DOE Loan Programs Office assistance

A federal policy agenda should include:
- Establishing ambitious heat pump cost and performance goals
- Focusing on innovation in new refrigerants, next-gen heat exchangers, drilling/piping for geothermal heat pump systems, novel electric drying systems, and low-temperature industrial processes
- Funding pilots and first-of-a-kind demonstrations of zero-emission industrial processes
- Providing loans and financial assistance to manufacture advanced heat pumps domestically
- Expanding appliance standards to include a wider range of commercial and industrial equipment and consideration of system efficiency

A federal policy agenda should include:
- Investing in R&D to create plastics and other chemicals that can be recycled more cheaply and easily and improved infrastructure for recycling plastics
- Developing crops and microorganisms to produce feedstocks for bio-based chemical manufacturing
- Funding public-private partnerships to build and operate large-scale test facilities
- Creating a product labeling system that reflects climate impacts
- Establishing “buy clean” programs for low-emission chemicals

Proteins made by microbes in fermenters and animal cells cultivated in bioreactors could substitute for many meat and dairy products, displacing emissions from agriculture.

A federal policy agenda should include:
- Providing more support from USDA for research on alternative proteins
- Providing public funding for testbed facilities
- Developing a Manufacturing USA innovation institute for alternative protein production technology
- Focusing regulations on potential risks of new products
- Adding alternative proteins to federal nutrition support programs
- Assisting farmers/ranchers in joining alternative protein supply chains

Learn more in ITIF’s report: “Clean and Competitive: Opportunities for U.S. Manufacturing Leadership in the Global Low-Carbon Economy,” available at itif.org