ENERGY POLICY

Providing clean, abundant, and affordable energy is a critical technical and policy challenge for the 21st Century. The ACS currently acknowledges no single energy technology is simultaneously reliable, affordable, clean, and secure for all people in the United States. Federal, state, and local government actions help U.S. energy production, distribution, and consumption. Additionally, energy availability is an important factor in achieving a robust clean energy standard. Energy policy must balance short-term goals, such as low costs to encourage economic growth and foster U.S. competitiveness, with long-term goals, including social equity, environmental protection, national security, and infrastructure resilience. It is important to develop new, and to improve existing, energy technologies in support of a diversified energy portfolio. The abundance of energy and diversity of energy sources an opportunity for governments and industry to develop, promote, and adopt a low-carbon energy standard.

The ACS believes the following core objectives should drive energy policy and use in the United States:

1) Provide a stable and sustainable supply of energy from low-carbon technologies
2) Guide investment decisions for research through the use of life cycle and techno-economic analyses
3) Modernize energy generation, distribution, storage, efficiency, and security infrastructure
4) Support responsible land use, environmental protection, and environmental equity

Environmental Equity and Protection

As we continue to consider the environmental impacts of energy production as a part of its market price, we must also recognize the importance of environmental equity and the facets of the energy sector that only affect specific, often traditionally marginalized, groups of people. Moving to greener sources of energy is an important step in addressing the environmental burden of energy production, but we must consider equity issues created by any new energy sources.

The ACS recommends:

- Using cost calculations that include impacts to the environment and vulnerable groups
- Engaging with local community leaders to understand and address potential impacts
- Including a diversity of perspectives in the decision-making process by engaging people with different areas of expertise, backgrounds, and life experiences

Conservation, Efficiency, and Life Cycle Analysis

The cleanest energy is that not used. Approaches to conserve energy should be developed to complement the deployment of low carbon energy technologies. Life cycle or system analysis, including waste management, is critical to determine if energy is being conserved. Improvement of one energy system component might be at the expense of degrading another – in whole, the system is only as green as the weakest link in the chain.

The ACS recommends:

- Use full life-cycle analysis should be used when making decisions regarding energy use and deployment, including end of life

The American Chemical Society (ACS) Board of Directors Committee on Public Affairs and Public Relations adopted this statement on behalf of the Society at the recommendation of the Committees on Chemistry and Public Affairs, Environmental Improvement, Science, and Corporation Associates. ACS is a non-profit scientific and educational organization, chartered by Congress, with more than 157,000 chemical scientists and engineers as members. The world's largest scientific society, ACS advances the chemical enterprise, increases public awareness of chemistry, and brings its expertise to state and national matters.

- Reinforce government leadership in energy efficiency, including regularly reviewing and strengthening efficiency standards across the transportation and infrastructure sectors
- Adopt measures such as efficiency labeling and tax incentives to encourage the sale of more efficient vehicles and buildings. Incentives and regulations must be predictable and ongoing

Electric Grid, Energy Storage, and Electrification

Energy infrastructure today needs to transition to sufficiently accommodate storage, intermittency, and increasing electrification. This requires increases in physical and cyber security, resiliency, grid flexibility, and transmission lines. Electrification is sustainable only if produced from low carbon sources.

The ACS recommends:

- Incentives that promote electric vehicles and increased transition to low-carbon charging sources that would maximize the electric vehicle low-carbon life cycle
- Development of better renewable electricity production technology, energy storage, heat pumps and other technologies relevant to supporting carbon-free electricity
- Support for stable electrical grid and flexible grid integration
- Coordination between government and the private sector to facilitate updating, maintaining, and protecting the nation's energy infrastructure, especially with respect to physical and cyber threats.

Low Carbon/Renewable Energy (LC/RE) Resources

Low Carbon/Renewable Energy is central to limiting climate change effects and the ACS recommends continued investment in R&D and deployment of these resources. Sources of LC/RE energy include nuclear, solar, wind, biomass, geothermal, and others.

The ACS recommends:

- Prioritizing long-term, coordinated support for research and development, technologies, and processes that (1) are transformative and (2) manage resources through their life cycle as defined by the ACS Sustainability statement.
- Robust investments in the procurement of energy from LC/RE resources and expand efforts to use renewable energy and materials in chemical manufacturing.
- Consistent, long-term policies to increase the competitiveness of LC/RE resources and technologies to reduce greenhouse gas emissions.
- Development of next generation, advanced nuclear reactor designs including small modular and breeder reactors.
- Development of a plan for used nuclear fuel currently situated throughout the U.S.

Fossil Fuel Based Energy Resources

Coal, oil, and natural gas continue to be prominent energy sources in the United States, but their full environmental, economic, and security costs must be factored in to market prices and national energy decision-making. The negative environmental impacts of burning fossil fuels must be addressed. Methane leaks during natural gas production, transport, storage, and distribution must be reduced to realize any possible environmental benefits versus coal. The chemical enterprise will play an important role in building a low carbon future, and fossil fuels need to be reserved as important chemical feed stocks.

The ACS recommends:

- More aggressive carbon mitigation and sequestration strategies to reduce the harmful environmental impacts of fossil fuel combustion
- Continued research, development, and demonstration of carbon capture, storage, and utilization technologies
- Full cost accounting for fossil fuel extraction, transportation, and use
- A sustainable transition from the use of fossil fuels for energy to their conserved use as chemical feed stocks

Hydrogen

Hydrogen is currently sourced from natural gas and other energy intensive processes. Consequentially, significant research and development will be necessary to enable the production of environmentally sustainable hydrogen. The safe and efficient storage, production and distribution of hydrogen is also a challenge if hydrogen is going to be pursued as an energy resource. At this time, the full life cycle costs, technological hurdles, and safety considerations are too high or uncertain for hydrogen to be a viable near-term energy option.

The ACS recommends:

- Complete life cycle analysis regarding the viability of a hydrogen economy
- Serious consideration of the engineering required for safe and efficient hydrogen distribution
- Research and development to support renewable hydrogen